DEFENSE TECHNICAL INFORMATION CENTER

A BASELINE DESCRIPTION OF DTIC SCIENTIFIC AND TECHNICAL INFORMATION SUPPORT SYSTEMS

LOGISTICS MANAGEMENT INSTITUTE

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Executive Summary

A BASELINE DESCRIPTION OF DTIC SCIENTIFIC AND TECHNICAL INFORMATION SUPPORT SYSTEMS

The Defense Technical Information Center (DTIC) knows it must modernize the support systems it uses to collect, process, and disseminate information on DoD funded research and development. Most of them are from 10 to 25 years old and during the last 6 years, DTIC has relied on them while undergoing reductions in staff and increased demands for its products and services.

The first step in modernization is to construct a description of the current systems, including their interactions, to serve as a baseline on design and implementation of improved systems. We have prepared such a description.

We recommend that DTIC take the following next steps in its modernization project:

- Implement a commercially available automated project management system to develop and manage systems modernization.
- Make available system analysts to facilitate use of personal computers and the Distributed Minicomputer for Management Information System (DMINS) terminals.
- Seek ways to make the process for filling document orders more efficient.
- Use state-of-the-art technology such as database management systems, high level programming languages and interactive processing to improve current automated data processing systems.
- Modify the acquisition database to eliminate unnecessary re-entry of data.

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1. INTRODUCTION

BACKGROUND

The Defense Technical Information Center (DTIC) provides information products and services to the Department of Defense (DoD) scientific and technical information community. As the DoD clearinghouse for Research, Development, Test, and Evaluation (RDT&E) information, DTIC provides a full range of services including:

- Online access to more than 1.5 million records in the Technical Report (TR), Work Unit Information System (WUIS), Independent Research and Development (IR&D), and Program Summary (PS) databases
- On-demand and recurring products from those databases
- Technical report acquisition and delivery services
- Research and development (R&D) in applicable information processing technologies.

Since 1980, DTIC has experienced a 300 percent growth in online queries of the TR database and nearly 50 percent growth in the number of documents delivered to users. During the same period, staffing levels have decreased slightly. Despite these significant increases in service demands and a corresponding lack of increased staffing, DTIC has not significantly upgraded or added to its automated systems. Many of those systems were designed and implemented in the late 1960's and early 1970's and reflect the state of automation technology at that time. Already pushed to the limit of processing capacity, those existing systems offer little further capability for being expanded to meet future service demands.

To meet the demand for increased levels of service within the constraints imposed by staffing ceilings, DTIC will rely heavily on improved and expanded automated support systems. Current automated systems must be upgraded, while

new systems will be developed for functions and processes that do not have adequate automation support.

OBJECTIVES

As a first step in its modernization effort, DTIC needs a description of the current systems: how the work is performed; the support system tools (automated, mechanical, and manual) used; and the interactions between DTIC's organizational elements in carrying out the workflow. Such a description will provide a baseline for planning the modernization effort. Planning considerations include identification of DTIC operational areas that require upgraded or newly developed systems, establishment of priorities among those areas, and an understanding of the affects of improved automation on the organization.

This report provides the baseline description of DTIC's support systems as they existed in June 1986. In addition to providing documentation of the current environment, it provides recommendations for changes. However, the recommendations are a secondary objective of the task and are, therefore, limited both in their scope and depth of analysis. The report can also serve other purposes such as a basis for communications between DTIC organizations regarding the workflow and as an introduction to DTIC operations to new employees.

CONTENTS

This report describes the support systems (as of 1 June 1986) in DTIC's Headquarters; the Boston, Massachusetts and Los Angeles, California field offices; and the Manpower and Training Research Information System (MATRIS) project office. It also describes DTIC's interactions with the DoD-managed Information Analysis Centers (IACs).

This chapter provides an introduction and a glossary of terms and acronyms used throughout the report. Chapter 2 provides a description of the support systems as viewed through the current organizational structure of DTIC. It describes the

responsibilities assigned to each directorate or office and continues that description down to the divisions, branches, sections, and informal teams that perform the actual business functions. The description of the work performed by each organization is brief because the full description is provided in Chapter 3.

Chapter 3 represents the bulk of the report. It is organized into groups of related work (referred to as process groups) that are composed of two or more units of work (processes). The processes describe the work and how it is performed. The descriptions represent detailed summaries of the work, but at a level higher than DTIC's Standard Operating Procedures (SOPs). They focus on the work flow and how the participating organizations interact with each other.

Chapter 4 presents recommendations regarding potential areas for systems modernization. Following that chapter are appendices that include the sources of information used for the development of the report and detailed flowcharts of some of the more complex processes.

GLOSSARY

AD	Accession Document – A unique identifier for every TR in the DTIC collection.
ADD	Automatic Document Distribution – Consists of profiles established at DTIC by DTIC users indicating their areas of interests, enabling them to receive microfiche copies of newly acquired TRs which match those interests.
ADP	Automated Data Processing.
ADPE	Automated Data Processing Equipment.
AMTD	Automatic Magnetic Tape Distribution – Citations for DTIC-accessioned TRs received during a 2-week period that are provided for a charge on magnetic tape and is a near equivalent to the information found in Technical Abstract Bulletin (TAB).
APCAPS	Automated Payroll Cost and Personnel System.
AQ Database	Acquisition Database – Contains information about TRs which DTIC is attempting or has attempted to obtain.

ATI/TIP	Air Technical Index/Technical Information Pilot – A card catalog of older documents stored at DTIC.
Bibliographies	Listings of TRs related to specific subjects. A computerized search is made of the DTIC collection to list applicable TRs with control numbers, descriptive data, and abstracts. There are three main types of bibliographies: demand, direct response, and current awareness.
CAB	Current Awareness Bibliography – A biweekly customized, automated bibliography based on the subject needs of DTIC Users.
CD-ROM	Compact Disk, Read Only Memory.
CENDI	Commerce, Energy, NASA (National Aeronautics and Space Administration), NLM (National Library of Medicine), Defense Information Group – A group of Government Scientific and Technical Information (STI) centers working to improve the flow of STI.
COBOL	Common Business Oriented Language.
COMSEC	Communications Security.
COSATI	Committee on Scientific and Technical Information.
CRT	Cathode Ray Tube.
CSL	Contributor Summary Listing – An output of WUIS, PS, and IR&D database transactions displaying those transactions and any errors which they contain.
Current File	A file of newly received TRs not yet updated to the TR database.
DAB	Document Abstract Bulletin – An IAC product of citations from the TR database indicating those TRs that are held in the IAC's collection.
DAL	Dissemination Authority List – A report indicating DTIC User access authorization levels derived from the Master User Access and Contract (MUAC) File.
DASC	Defense Administrative Support Center.
DB	Database.
DBMS	Database Management System.
DDC	Defense Document Center – Previous name for DTIC.
Demand Bibliographies	A bibliography resulting from a tailor-made literature search on a particular subject conducted at the request of a DTIC User.

Demand Document Ordering	A process whereby DTIC Users may demand (order) TRs in paper copy or microfiche form from DTIC via DTIC Form 1, Document Request, Defense RDT&E On Line System (DROLS), telephone, or letter.
Demand Reports	Tailor-made retrievals performed by DTIC from its management databases.
DGIS	Defense Gateway Information Service.
DIMES	Defense Integrated Management Engineering System.
Direct Response Bibliography	A list of AD numbers of TRs which meet a specific information request received by telephone, telegram, Mailgram, or letter. DTIC responds via telephone.
DIS	Defense Investigative Service.
DLA	Defense Logistics Agency.
DLAM	Defense Logistics Agency Manual.
DLAR	Defense Logistics Agency Regulation.
DLSC	Defense Logistics Services Center.
DLSIE	Defense Logistics and Studies Information Exchange.
DMINS	Distributed Minicomputer System for Management Information System – A DLA-wide office automation system.
DOE	Department of Energy – DOE's STI facility in Oak Ridge, Tennessee is a member of CENDI.
DRIS	Defense Regional Interservice Support.
DRIT	DTIC Retrieval and Indexing Terminology – DTIC's fully hierarchical subject headings used in indexing and retrieving STI data.
DROLS	Defense RDT&E On Line System – Links remote terminals located across the United States to DTIC's central computer at Cameron Station, Virginia. DROLS is an interactive system enabling DTIC Users to input as well as retrieve STI information.
DROLS User Council	An independent organization of DTIC/DROLS Users.
DTIC	Defense Technical Information Center.
DTSS	DTIC ADPE Time-Sharing Service – A time-sharing service on the Sperry 1100/61.
EEO	Equal Employment Opportunity.
FAR	Federal Acquisition Regulation.

Fields and Groups	Broad categories of subject knowledge (fields) with subdivisions (groups) used by DTIC to control user access to its databases.
GFE	Government Furnished Equipment.
GPO	Government Printing Office.
GRA&I	Government Reports Announcements and Index.
How to Get It	Subtitled *A Guide To Defense Related Information Resources*, is a DTIC product listing Government released STI documents and information on how to obtain them.
IACs	Information Analysis Centers – Centers for the analysis of STI in specialized subject areas. DTIC establishes, funds, and manages a number of these centers for DoD; other DoD IACs are controlled by other DoD activities. An individual IAC's coverage of its specialized subject area is of greater depth and breadth than is possible at DTIC.
IAS	Indexing and Abstracting System – A data entry system used by the MATRIS Office.
IBM	International Business Machines.
IR&D	Independent Research and Development.
IR&D Database	Contains descriptions of technical programs which are initiated and performed by DoD contractors and are not wholly funded by DoD. This information is considered proprietary, exempt from disclosure under the Freedom of Information Act, and available only to DoD organizations.
JCP	Joint Committee on Printing – Congressional Committee which oversees Government printing operations including DTIC's printing division.
Lexical Dictionary	Tables within the Machine-Aided Indexing (MAI) programs that map selected words and phrases into DRIT terms.
Limited Document	A TR that has a distribution limitation imposed by its controlling office restricting distribution to defined subsets of DTIC users. Such documents may be either classified or unclassified.
MAI	Machine-Aided Indexing – Computer programs that accept incoming citations, decompose the text into a series of context-sensistive and content-free phrases, and convert those phrases into valid DRIT terms.
MAR	Master Account Record.

MATRIS	Manpower and Training Research Information System – A management-support database containing unclassified information on Manpower, Personnel, and Training (MPT) research sponsored by DoD. Specific research areas covered by MATRIS include manpower and personnel, education and training, human factors, and simulation and training devices.
MBO	Management by Objective.
MIP	Model Installation Program.
MIS	Management Information System.
MIS Reports	Demand and recurring MIS reports involving separate compilations of data contained in the WUIS, PS, and IR&D databases.
Monitor Acronym File	Contains codes for Government agencies which released data to DTIC.
MOU	Memorandum of Understanding.
MPT	Manpower, Personnel, and Training.
MUAC	Master User Address and Contract – A computerized central registry file of users authorized access to defense STI maintained by DTIC.
NASA	National Aeronautics and Space Administration – NASA's STI Program is a member of CENDI.
NATO	North Atlantic Treaty Organization.
NLDB	Natural Language Data Base – An older version of the MAI tables now used only in conjunction with reviewing DRIT online.
NLM	National Library of Medicine – A member of CENDI.
NPRDC	Naval Personnel Research and Development Center.
NSA	National Security Agency.
NSF	National Science Foundation.
NTIS	National Technical Information Service – The Department of Commerce public clearinghouse of unclassified/unlimited Government reports. NTIS works with DTIC in many areas including acting as its billing agent and receives unclassified/unlimited TRs that are releasable to the general public. DTIC documents released to NTIS are indexed in their GRA&I. NTIS is a member of CENDI.
OASD (FM&P)	Office of the Assistant Secretary of Defense (Force Management and Personnel).
OCR	Optical Character Reader.
OPI	Office of Primary Interest.

OSD	Office of the Secretary of Defense.
OTIS	Office of Telecommunications and Information Systems.
OUSDRE	Office of the Under Secretary of Defense for Research and Engineering.
PCS	Planning Control System.
PEDS	Program Element Descriptive Summary.
PFLA	Primary Field Level Activity.
Picking Tickets	Document order forms printed by DTIC's computers on perforated card stock. The left side (proof-of-shipment portion) of the picking ticket contains order information, while the right side contains the user's address and is used as a mailing label.
Pipeline	Usually refers to the operation of the Store TR and Publish TAB processes which begins with a newly received TR and ends with its announcement in a TAB. Alternatively, it can refer to any DTIC production process.
POM	Program Objective Memoranda.
Proof-of-Shipment	The left side of a picking ticket entered into the Request Processing (RP) system whenever an order is mailed.
PS	Program Summary.
PS Database	Consists of summary descriptions of proposed project or task-level RDT&E efforts. This database is actually a subset of the WUIS database. It is no longer updated and will be replaced by the PEDS database.
PSE	Principal Staff Element.
RBMT	Retrospective Bibliography on Magnetic Tape – A demand bibliography delivered to users on magnetic tape rather than paper copy.
RD5	See PS Database.
RDT&E	Research, Development, Test, and Evaluation.
Recurring Reports	Customized, automated products composed of WUIS, IR&D, or PS information based on the subject needs of DTIC Users. Recurring Reports can be produced on an automated monthly, quarterly, semiannual, or annual basis. Users can receive these free, paper copy reports.
Referral Database	A database maintained by DTIC to supplement its document services by gathering information on specialized scientific and technical Government-sponsored activities with the capability and willingness to serve the defense community in their field of expertise.

Referral Databank Directory	An unclassified AD document available from both DTIC and NTIS which lists entries for activities contained in the referral database.
Reference Services	Services provided by the Reference Section to answer any questions submitted relating to Government STI and is available to anyone.
REGIS	Research and Engineering General Input System – A system used to update and maintain WUIS, IR&D, and PS databases.
RFP	Request for Proposal.
RP	Request Processing – A system that processes orders for TRs and maintains an inventory of TRs and their order history.
RSAG	Resource Sharing Advisory Group – Consists of members representing DTIC and at least six Shared Bibliographic Input Network (SBIN) sites, formed in 1980 to provide advice and make recommendations on matters dealing with the DTIC Shared Cataloging program and other resources sharing activities.
RTIS	Remote Terminal Input Subsystem – A system used by DTIC and external users to input TR and WUIS data.
SBIN	Shared Bibliographic Input Network – Consists of over 70 sites within the community of DoD and its contractors for inputting bibliographic information for TRs via DROLS and RTIS.
SBIR	Small Business Innovation Research – A DoD program that DTIC supports by providing technical information packages for each topic in DoD's SBIR program solicitation to small businesses responding to these solicitations. A technical information package contains a bibliography of DoD-funded TRs and summaries of Research and Development (R&D) projects in progress. Referrals to DoD IACs and other sources of STI relevant to the solicitation topic are included.
SMDR	Summary Management Data Report.
SOP	Standard Operating Procedure.
Source Hierarchy List	A two-volume publication listing organizations hierarchically and their codes used in DTIC's databases.
Source Header List	A two-volume listing of source names and their codes used by DTIC in its databases.
STI	Scientific and Technical Information.
STIP	Scientific and Technical Information Program.
TAB	Technical Abstract Bulletin.

TAB and Indexes	A biweekly announcement publication (classified confidential) of TRs accessioned by DTIC within a 2-week processing cycle. TRs are grouped into a two-level arrangement consisting of major subject fields and further subdivisions into related subject groups. TAB Indexes (TAB-I) consist of seven indexes to the citations in TAB and to the unclassified/unlimited reports which have been added to the DTIC collection but which are given their full announcement by NTIS in their GRA&I.
TAB-I	TAB Indexes.
TIS	Technical Information Specialist.
TR	Technical Report.
TR Database	A collection of bibliographic citations to documents that convey progress or results of defense-sponsored RDT&E efforts.
TRAC	Technical Reports Awareness Circular – A product scheduled to replace the TAB in January 1987 and become DTIC's general announcement document.
Uncontrolled Terms	Unrestricted subject terms and identifiers that indexers may apply to DTIC data.
UNIDAS	A database management system used at DTIC to maintain the full thesaurus version of DRIT.
WUIS	Work Unit Information System.
WUIS Database	A collection of technically oriented summaries describing DoD research and technology efforts at the work unit level. NASA efforts are also included. This database includes information concerning the what, where, when, how and at what costs, by whom, and under what sponsorship research is being performed.

2. ORGANIZATION DESCRIPTION

INTRODUCTION

This chapter describes the way DTIC is organized to fulfill its mission. DTIC is a Defense Logistic Agency (DLA) primary level field activity and is organized according to guidelines contained in DLA Manual (DLAM) 5810.1, *Organization of DLA Field Activities.* DTIC's mission is summarized in Figure 2-1. DTIC is organized into six staff elements (five offices and the Administrator's Personal Staff) and three mission or line elements (directorates) as shown in Figure 2-2. The line elements perform direct mission functions, and the staff elements perform advisory and administrative functions that contribute indirectly to the accomplishment of the mission. However, in several cases offices also have direct mission responsibilities.

This chapter describes the organizational elements of DTIC in the same order as presented in DTIC 5810.1, *Organizations, Missions, and Functions Statement.* A description of each element's functions and responsibilities in accomplishing DTIC's mission is presented in this chapter and a description of how they perform their functions is given in Chapter 3. Organizational relationships within an element are described in this chapter and organizational interdependencies among elements are described in Chapter 3. Tools utilized by elements in their work are indicated in this chapter as are short term future plans that may affect them.

The *Organization of DLA Field Activities* indicates that staff and mission elements may be divided into four organizational subdivisions: office or directorate, division, branch, and section. Additionally, there may be an element that consists of "Personal Staff." DTIC conforms to this structure but has found it necessary to subdivide further below the section level within the mission elements. While DTIC's *Organizations, Missions, and Functions Statement* and other materials such as

FIGURE 2-1. DEFENSE TECHNICAL INFORMATION CENTER MISSION STATEMENT

DEFENSE TECHNICAL INFORMATION CENTER

A. MISSION

Under the operational control of the Director, DLA, and in accordance with OUSDR&E policy guidance, the DTIC shall:

1. Provide centralized operation of DoD services for the acquisition, storage, retrieval, and dissemination of STI to support DoD research, development, and engineering and studies programs.

2. Serve as a focus for specific actions required by the OUSDR&E to meet technical information needs of the STIP.

3. Develop and provide specialized information system support approved or directed by the OUSDR&E.

4. Work directly with the OUSDR&E to formulate objectives and programs concerning STI transfer among the Military Departments, Defense Agencies, and other U.S. Government agencies.

5. Participate with the OSD and federal agencies in formulating DoD and federal policies relating to STI transfer.

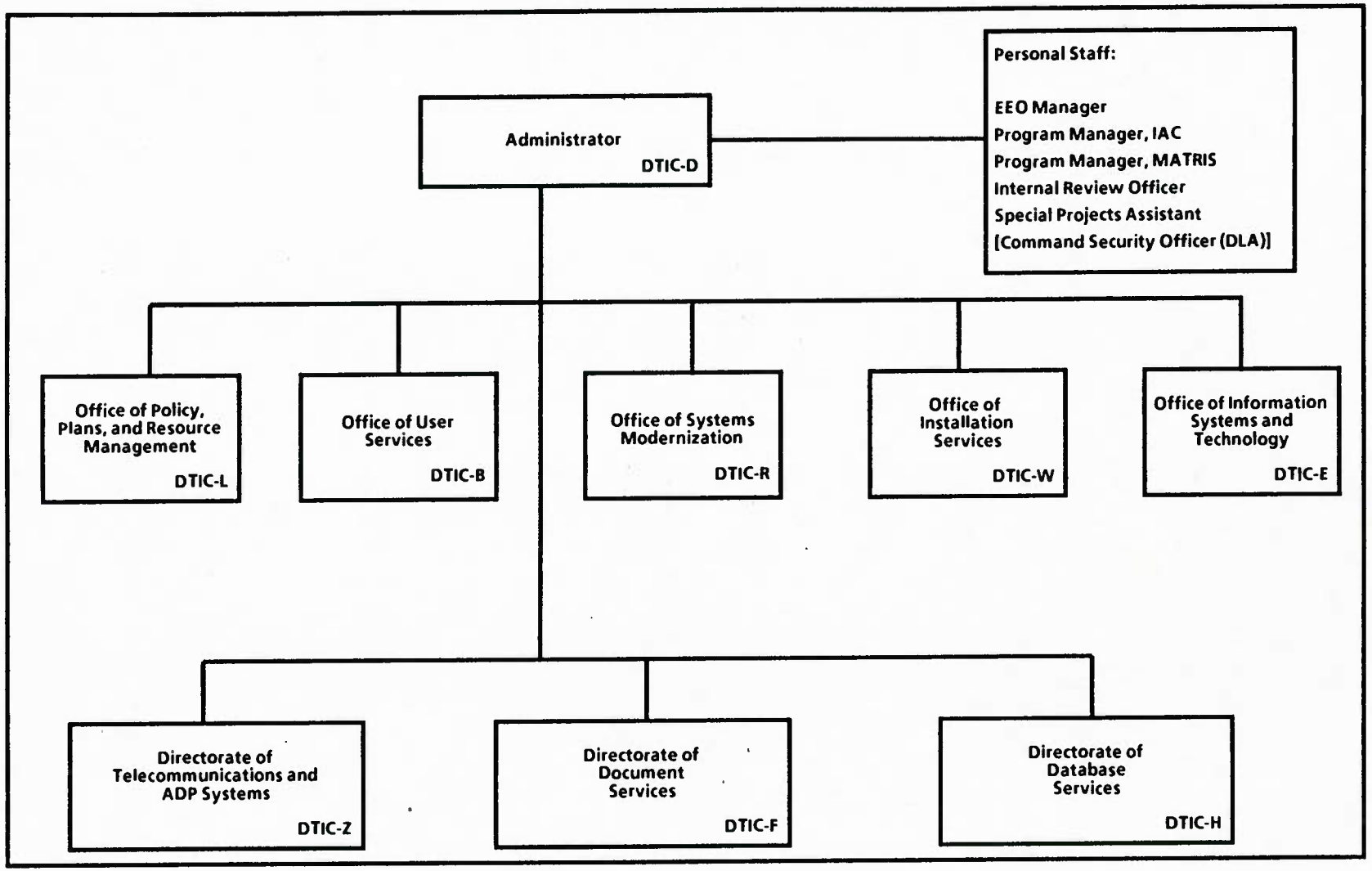
6. Function as a central activity within the Department of Defense for applying advanced techniques and technology to DoD STI systems and for developing improvements in services and STI transfer effectiveness in support of STIP objectives.

7. Represent the Department of Defense at STI meetings, conferences, or symposia to support mission objectives.

8. Provide liaison with other DoD and government STI organizations (such as the Defense Logistics and Studies Information Exchange (DLSIE) and the National Aeronautics and Space Administration.)

SOURCE: DoD Scientific and Technical Information Program, Department of Defense Directive No. 3200.12, 15 February 1983.

FIGURE 2-2. DTIC ORGANIZATION CHART



DTIC's personnel listing reflect their organization only to the section level, this report includes subdivisions below the section. No formal designations exist to identify these lower subdivisions except that they are called teams. In all the organizational charts appearing in this chapter, these informal subdivisions are illustrated by dotted boxes. These teams are included in the descriptions of DTIC's organization and support systems. Additionally, there are charts that depict the interactions an office or directorate has with other organizational elements. The arrows that appear on these charts indicate the flow of information and/or materials.

MISSION AND OVERALL ORGANIZATION

The mission of DTIC (specified in Figure 2-1) consists of three programs within the DoD STIP. Those programs include the operational program, the IAC program, and the development program. In the development and operational programs, DTIC acts with DoD Components and other agencies to create and establish management and technical information systems and services to exchange DoD STI easily. DTIC also operates, maintains, and enhances these systems. In the IAC program, DTIC acts directly with OUSDRE and other agencies to operate assigned DoD IACs.

DTIC's organizational structure was shown in Figure 2-2 on page 2-3. The responsibilities and functions of the offices include standard administrative management support activities described in DLAM 5810.1. The Office of Systems Modernization is a recent addition to DTIC's organization and is not yet fully staffed.

Most of the activities performed by the three Directorates contribute directly to DTIC's missions. The activities of the Directorate of Document Services generally include the physical handling of documents which consist of: (1) actively acquiring TR documents, (2) maintaining an inventory of TRs, (3) reproducing the original TRs, and (4) sending copies to requesters. The activities of that Directorate also include "nondocument" oriented work such as registering users and providing reference services.

The activities of the Directorate of Database Services generally focus upon information about the documents and their representation in DTIC's computerized databases. Much of the activity in that Directorate involves entering information into the databases and retrieving data from them.

The Directorate of Telecommunications and ADP Systems supports the activities of the other two directorates through such activities as performing data entry, producing outputs, and operating ADP equipment. That Directorate also provides nonoperational support such as programming the computers to perform

additional functions. The offices and directorates are described further in the following subsections.

OFFICE OF THE ADMINISTRATOR AND PERSONAL STAFF

Six organizational elements make up the Office of the Administrator, including the Administrator's own office. The Administrator directs and controls DTIC in the accomplishment of its mission and is supported by a Deputy Administrator who acts for the Administrator as required. The elements that constitute the Administrator's Personal Staff are the Internal Review Officer, the Equal Employment Opportunity (EEO) Manager, the Program Manager for the IACs, the Program Manager for MATRIS, a Special Projects Assistant, and the Command Security Office. Figure 2-3 depicts the organization of the Office of the Administrator and his personal staff.

Equal Employment Opportunity Manager (DTIC-DK)

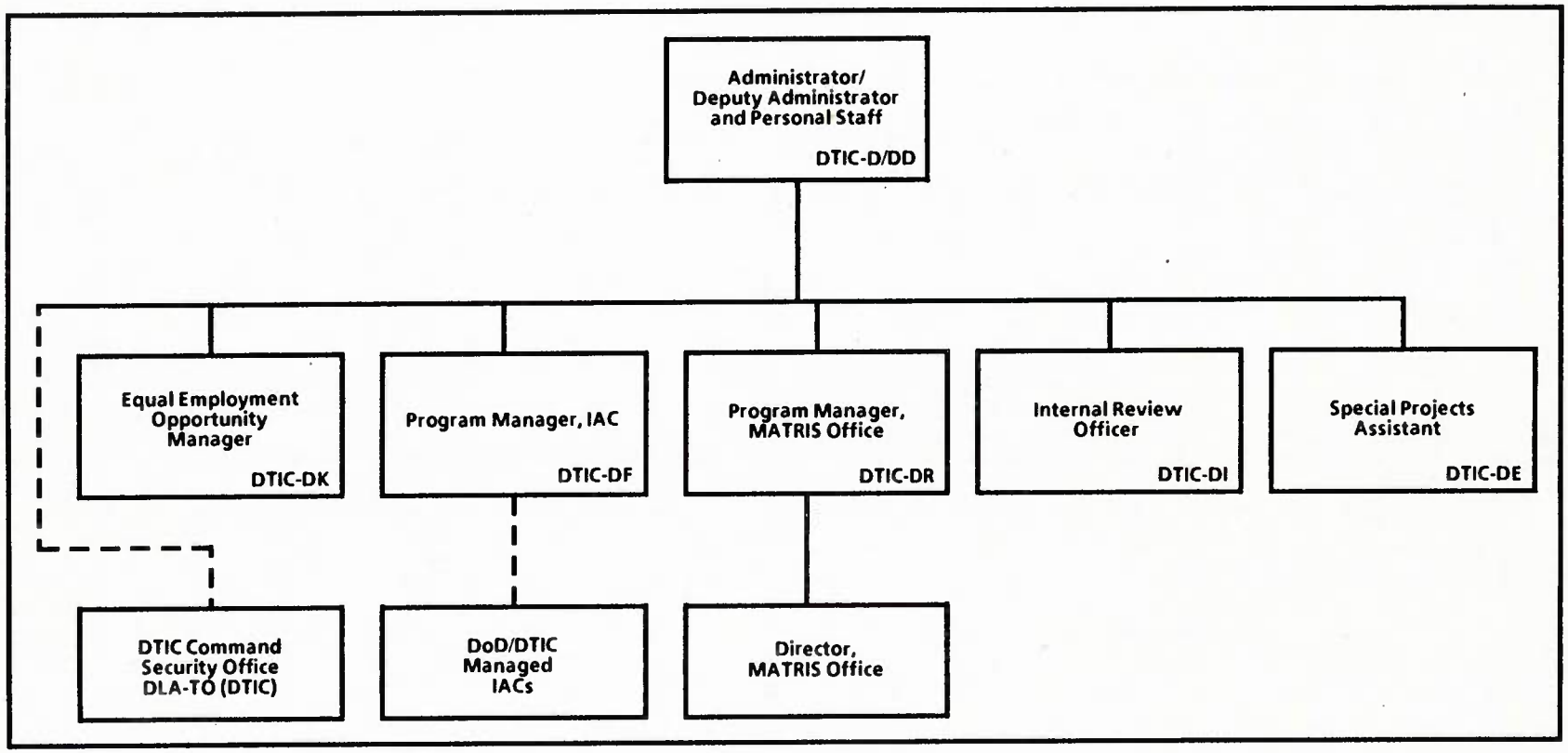
The EEO Manager acts as the principal advisor and assistant to the Administrator on the development, execution, and evaluation of the EEO Program. The EEO Manager: (1) takes positive steps to prevent EEO complaints from DTIC personnel and ensures that DTIC positions reflect the EEO composition of the Metropolitan Washington, D.C. area; (2) investigates EEO complaints, observing legally prescribed procedures and issuing decisions that are either implemented or appealed; (3) reports on DTIC's EEO status to DLA and DoD; and (4) participates in EEO conferences.

Tools. The EEO Manager utilizes a system operated by DLA that tracks and reports minority positions (these reports are produced quarterly and upon request). DTIC minority position data are prepared on a form by this manager and forwarded to DLA for entry into the DLA system located in Richmond, Virginia.

Organizational Interactions. The EEO Manager works with the EEO designated representatives of each Principal Staff Element, with EEO complainants, and with external EEO representatives from DLA, DoD, the U.S. EEO Commission, and other persons as required.

Future Plans. The EEO Manager expects a Distributed Minicomputer System for Management Information System (DMINS) terminal.

FIGURE 2-3. OFFICE OF THE ADMINISTRATOR ORGANIZATION CHART



Information Analysis Center (IAC) Program Manager (DTIC-DF)

The program manager for IACs operates and manages the contractor-operated DoD IACs assigned to DTIC as the sponsoring DoD component by OUSDRE. Activities performed by this program manager include: (1) preparing and defending annual and outyear budgets for funding the individual IACs, (2) initiating procurement activity for IAC contracts authorized by OUSDRE and preparing necessary contract documents including distribution-of-funding authority with the appropriate contracting officer technical representatives and procurement contracting officer, (3) organizing and evaluating the technical proposals in response to the Requests for Proposals, (4) reviewing IAC performance and recommending improvements, (5) sponsoring IAC technical meetings to exchange information on common problems, and (6) implementing IAC program objectives and requirements including preparing Congressional hearing IAC fact sheets.

Tools. Manual forms are utilized.

Organizational Interactions. The program manager for IACs interacts with OUSDRE, vendors, sponsoring DoD Components, DoD component contracting offices, contracting officer technical representatives, current and potential IAC users, and other DTIC staff elements.

Manpower And Training Research Information System (MATRIS) Program Manager

The program manager for MATRIS, unlike the other members of the Administrator's personal staff, has responsibility for an operational organization. Additionally, it is the only DTIC personal staff position occupied by an employee also filling another position. Usually, the MATRIS program manager is also one of the supervisors in the Office of Information Systems and Technology.

The MATRIS Office is located in San Diego, California. A significant function of the MATRIS program manager is liaison and coordination between the San Diego

Office and the DTIC Headquarters. This liaison includes representing MATRIS in DTIC management meetings and other DTIC-wide activities such as budgeting.

The program manager also oversees the MATRIS operation which provides information, products, and services on research and development (R&D) projects related to Manpower, Personnel, and Training (MPT). MATRIS collects MPT data at four levels: summary program element data, project data, task data, and individual work units; it formats, edits, and enters the data into a database. MATRIS works only with R&D summary information and does not work with TRs. Within that scope, MATRIS provides a variety of information products, services, and publications. In providing these products and services MATRIS develops new approaches to information delivery and productivity enhancement.

MATRIS was initially developed as part of the U.S. Navy. As interest in its operation spread to the other Military Services, it was transferred to DTIC in 1982 but remained in San Diego, California. An executive council composed of DTIC, DLA, OUSDRE, and the Office of the Assistant Secretary of Defense (Force Management and Personnel, [OASD(FM&P)] personnel provides policy guidance for the MATRIS mission.

MATRIS is organized in three major teams – Systems Support, Operations Support, and Administrative Support – managed by a program manager. A fourth area – Development and Analysis Support – has been approved but not yet staffed. Figure 2-4 depicts MATRIS' organizational structure. Figure 2-5 illustrates MATRIS' interfaces with other organizational elements.

Tools. The MATRIS Program Office uses 16 International Business Machines (IBM) personal computers (PCs) to support almost all aspects of its work, from office automation and data entry to user query processing. A variety of software packages support the various applications. The PCs are linked by a local area network. The MATRIS Program Office maintains its primary database on the Sperry 1100/61 using the BASIS database management system.

FIGURE 2-4. MATRIS OFFICE ORGANIZATION CHART

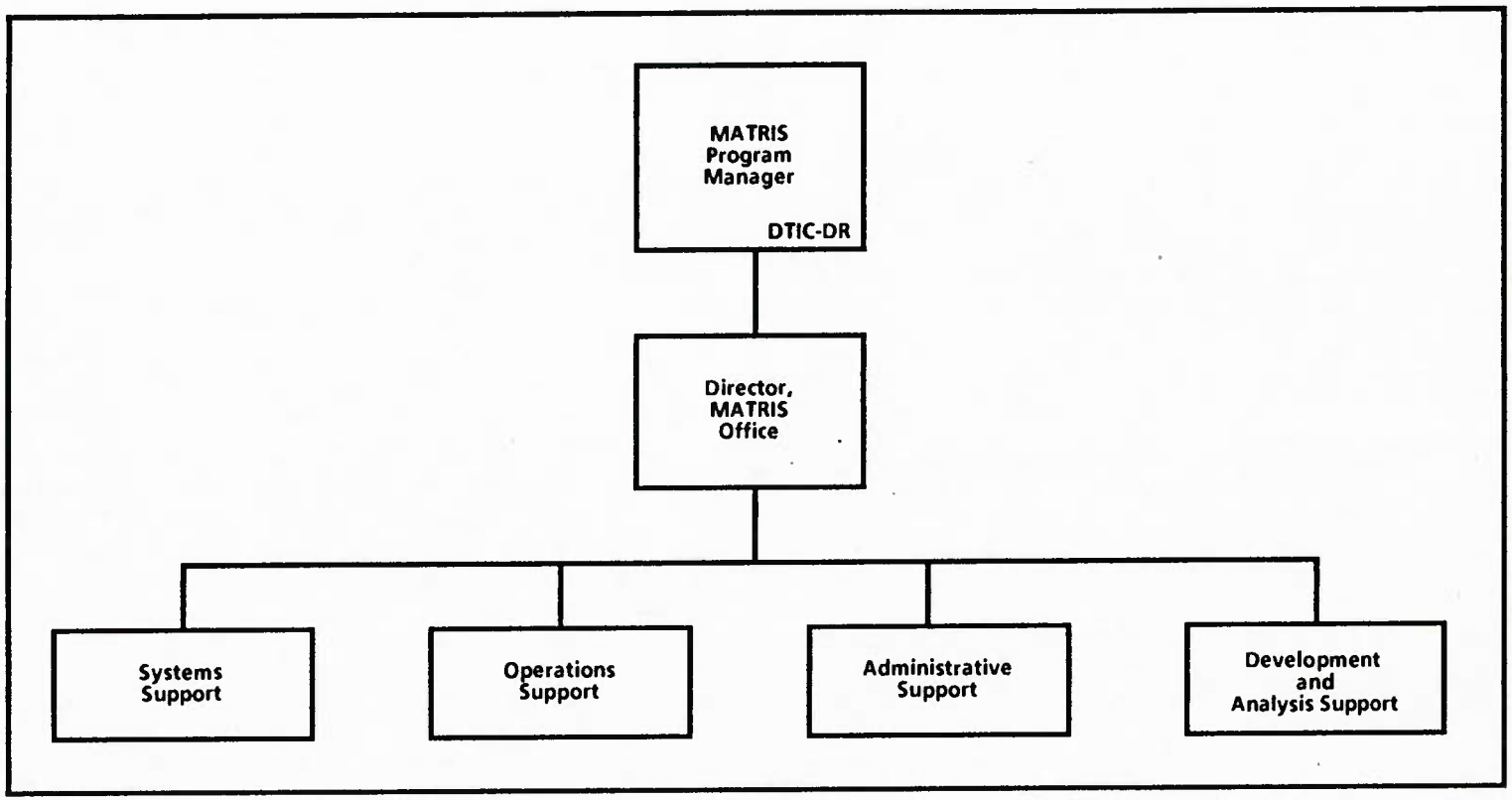
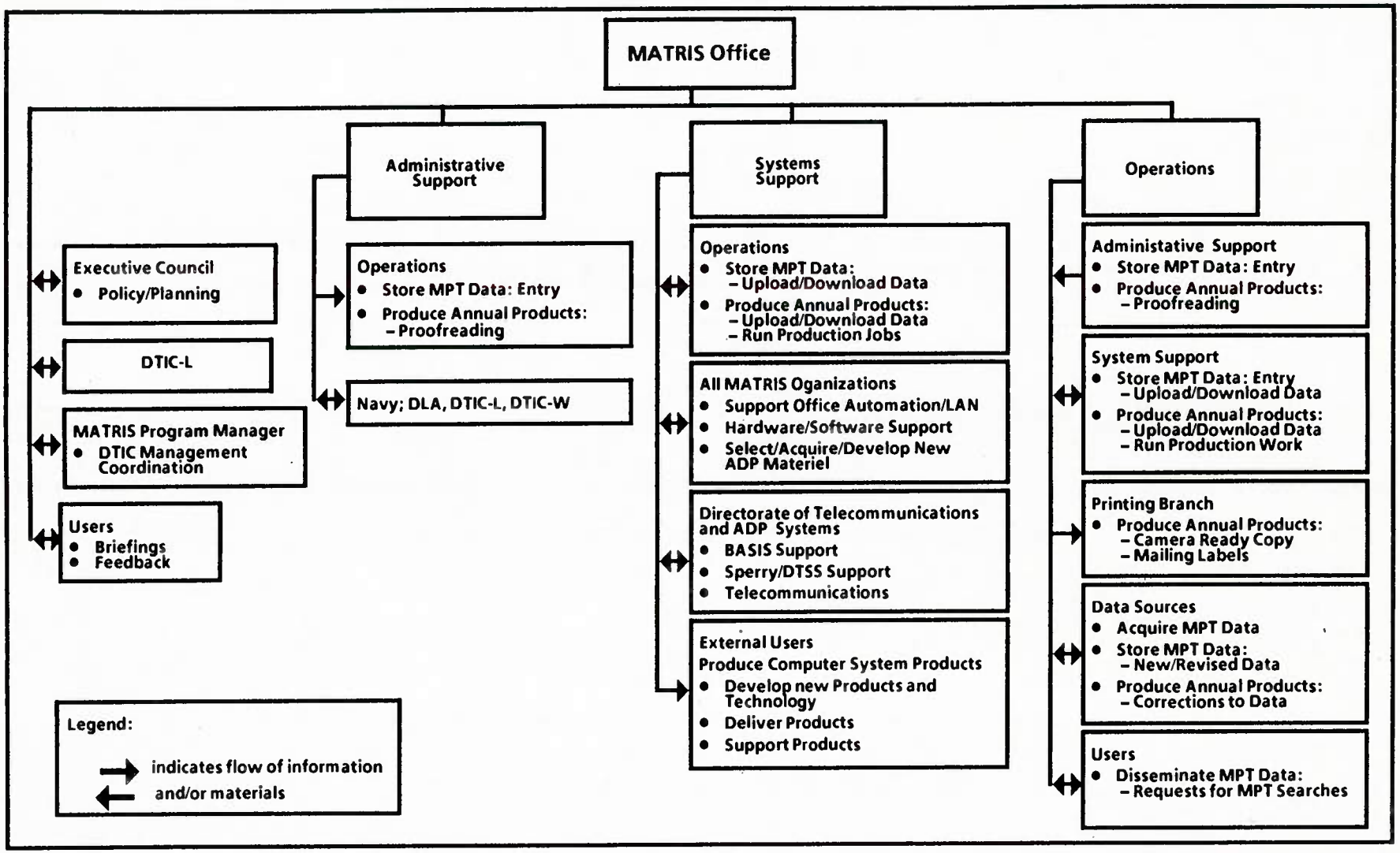


FIGURE 2-5. MATRIS OFFICE INTERACTIONS



Organizational Interactions. The MATRIS Program Office handles most of its workload in San Diego, California. It relies on the Printing Branch for the reproduction of some annual products and large volume printing. It also works with the Telecommunications and ADP Systems Directorate for 1100/61 computer support. It relies on DLA offices in Los Angeles, California and U.S. Navy facilities in San Diego, California for some of its administrative support. By definition of its work, the MATRIS Program Office has its most extensive contact with its user community.

Future Plans. The MATRIS Program Office will acquire two new large-scale microcomputers. One will support the MATRIS database which will be removed from the Sperry 1100/61. The other will be used as a Defense Gateway Information Service (DGIS) gateway node. Other MATRIS plans include replicating the MATRIS concept in new subject areas. MATRIS has been working with the Military Services to develop a system for the Biomedical Research Community.

Internal Review Officer (DTIC-DI)

The Internal Review Officer is responsible for providing the Administrator with an independent appraisal of DTIC's operations and the effectiveness of its internal control procedures. The operational controls that check, balance, and prevent losses from fraud, waste, abuse, and mismanagement of resources are established and implemented by the internal control program. The Office of Policy, Plans, and Resource Management (DTIC-L) controls that program; provides policies, procedures, and guidance as required; and acts as DTIC's focal point on all matters pertaining to internal control. The Internal Review Office is responsible for reviewing these internal control objectives and procedures to evaluate their effectiveness and report that evaluation to the Administrator for subsequent action.

Tools. Manual forms are used to document the internal control procedures which are assessed, during face-to-face interviews and on-site inspections.

Organizational Interactions. The Internal Review Officer meets with any DTIC personnel as appropriate.

Special Projects Assistant (DTIC-DE)

The Special Projects Assistant serves as a staff assistant to the Administrator with responsibilities assigned on an as-needed basis. Examples of recent activities of this assistant include performing as DTIC's planner for the CENDI Group;

coordinating the implementation at DTIC of the use of DTIC Form 2345 for export control of technical data; and advising DTIC and its user community on the process for certification with the Defense Logistics Services Center (DLSC) for access to unclassified, export-controlled technical data. No standard or ongoing support system tools are utilized by this Office. This Office interacts on an as-needed basis with any other internal or external organizational element.

Command Security Office

The Command Security Office [DLA-TO (DTIC)] is administratively placed within the DLA security organization. However, its duties are almost entirely oriented to supporting DTIC. The Security Office is composed of a chief, an ADP facilities security officer, and a security guard force.

The Security Office and the guard force are responsible for the direct physical security of the DTIC facility, which includes monitoring and controlling of all personnel into classified areas, patrolling the facility to verify its security status, and monitoring the alarm system.

The ADP Security Officer is responsible for all aspects of ADP security except software security, which is the responsibility of the staff of the Telecommunications and ADP Systems Directorate. The ADP Security Officer is also responsible for physical security of the equipment areas and for telecommunications security, such as security of the cryptographic equipment.

The Chief Security Officer is responsible for overseeing all of these operations and administrating the security program in the rest of the organization. Each DTIC organizational element has a security representative who informs staff members of security policies and responsibilities. That representative also monitors and maintains security records for newly employed and departing personnel.

The Chief Security Officer is also responsible for monitoring DTIC's adherence to its security procedures. That responsibility includes performing periodic security

inspections and investigating any reports of possible security violations. Staffing frequently requires hiring personnel who do not have a security clearance. The Chief Security Officer is authorized to issue waivers that will allow an employee to begin work pending the security investigation.

Tools. The Security Office uses DTIC ADP Equipment (ADPE) Time-Sharing Service (DTSS) to maintain logs of non-DTIC personnel who have been given access to the secure areas.

Organizational Interactions. The Security Office interacts with all organizational elements at DTIC, primarily through the security representatives.

OFFICE OF POLICY, PLANS, AND RESOURCE MANAGEMENT (DTIC-L)

The Office of Policy, Plans, and Resource Management is responsible for developing and implementing policies and objectives relating to: (1) managing plans, systems, procedures, and management of organization and position; (2) conducting operations research and economic analyses; and (3) administrating the commercial activities program. It is organized into five elements shown in Figure 2-6 and discussed below.

Operations Research And Economic Analysis Office (DTIC-LO)

This organizational element is currently being staffed. Its primary planned functions are operations research and economic (cost-benefit) analyses of DTIC's operations.

Organization And Mission Control Division (DTIC-LP)

The Organization and Mission Control Division is responsible for organization support, position management, defense regional interservice support, emergency planning, corporate planning, systems and procedures support, and command administration. There are no further subdivisions within this division.

Resource And Program Management Division (DTIC-LR)

The Resource and Program Management Division contains two branches as described below.

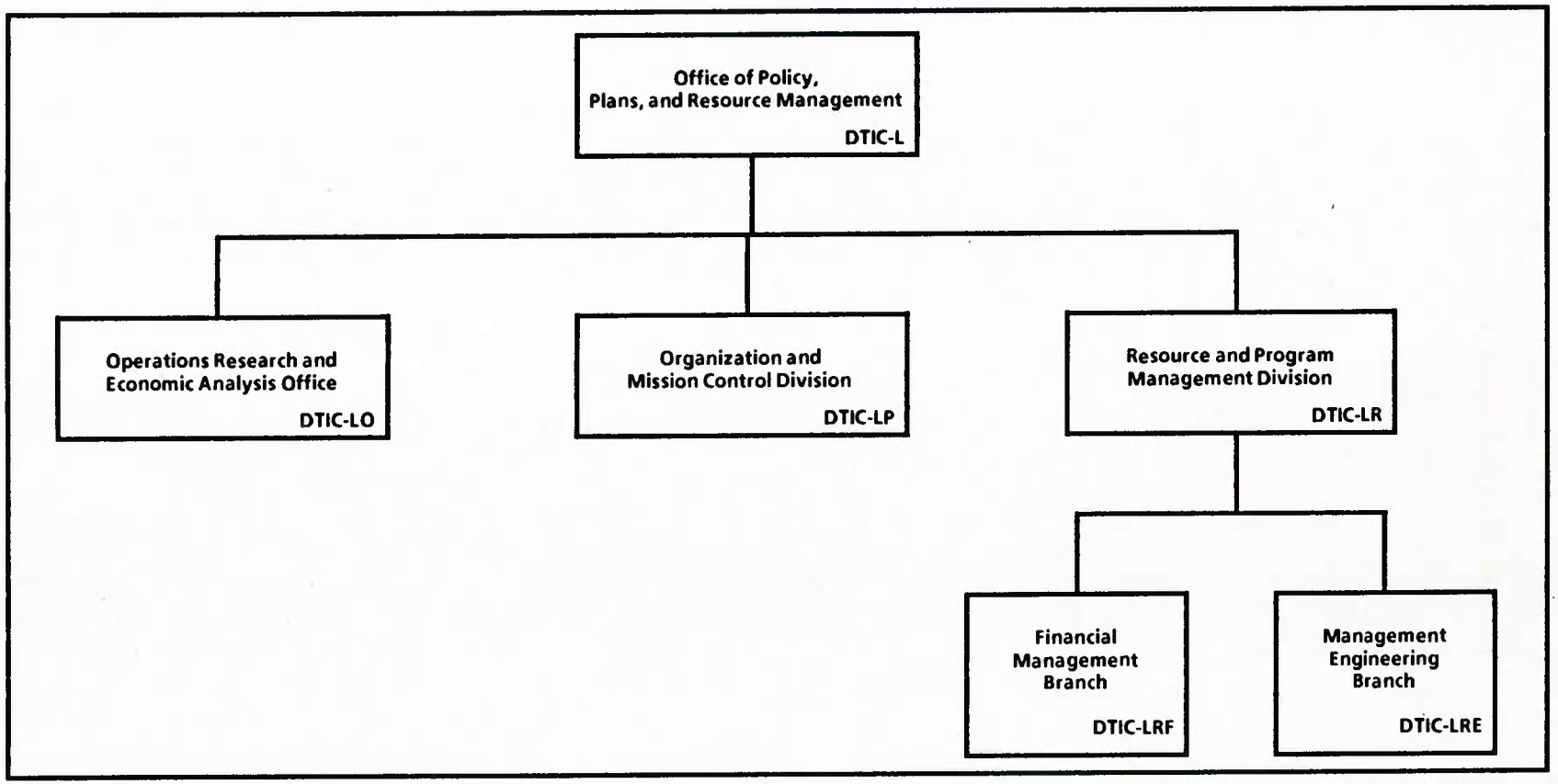
The Financial Management Branch (DTIC-LRF)

The Financial Management Branch is responsible for financial management, programming/budgeting, and systems analysis and procedures support.

Management Engineering Branch (DTIC-LRE)

The Management Engineering Branch is responsible for management engineering, commercial activities support, and quality assurance.

FIGURE 2-6. OFFICE OF POLICY, PLANS, AND RESOURCE MANAGEMENT ORGANIZATION CHART



Tools. An IBM PC is used with LOTUS 1-2-3 spreadsheet software to develop and maintain DTIC's budget, the "checkbook," the obligation-and-commitment documents, and the model installation program (MIP) activities. A Hewlett Packard PC is used to draw graphs and other presentation materials. A computer device terminal is used to access remote systems. A Motorola Four-Phase terminal is used for data entry to Automated Payroll Cost and Personnel System (APCAPS).

Organizational Interactions. This Office works with all other DTIC organizational elements as well as with other Government agencies (particularly DLA) providing administrative support to DTIC.

OFFICE OF USER SERVICES (DTIC-B)

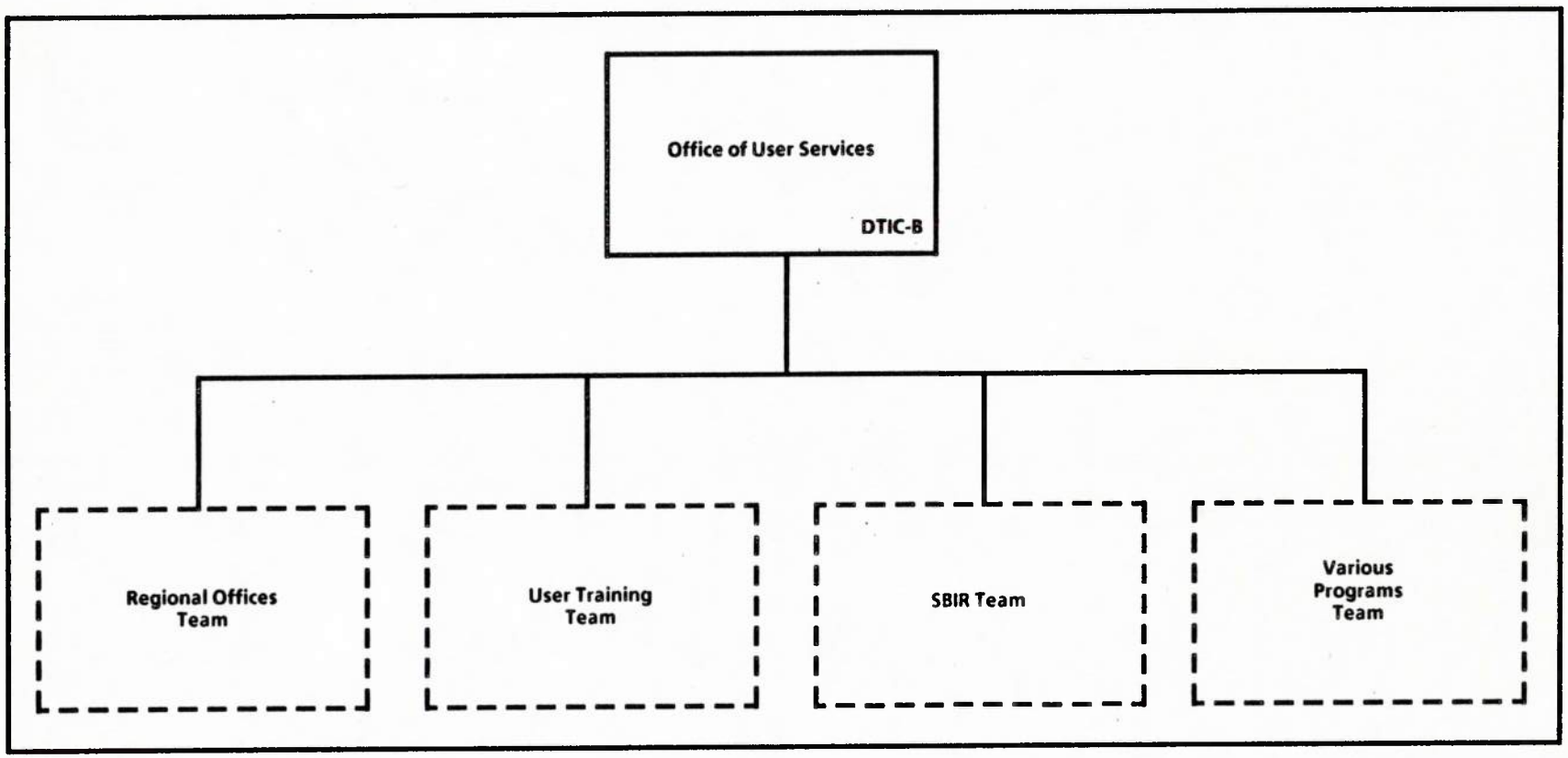
The activities of the Office of User Services are conducted by four informally organized teams (Figure 2-7): the Regional Offices Team, the Small Business Innovation Research (SBIR) Team, the User Training Team, and the Various Programs Team. The Regional Offices Team is composed of four employees who operate DTIC's field offices in El Segundo, California and Boston, Massachusetts. The User Training Team is responsible for providing user training and assistance on DTIC's online retrieval and input systems. The SBIR Team is responsible for operating DTIC's portion of the DoD's SBIR Program. The Various Programs Team is responsible for a variety of activities including:

- Responding to user queries, providing assistance, and resolving complaints
- Organizing annual and regional conferences
- Providing DTIC liaison to The Pentagon
- Approving public and media releases of DTIC information
- Assisting in writing and reviewing speeches
- Providing public relations activities such as tours
- Formulating DTIC marketing activities.

The compositions of the teams and their activities shift to meet DTIC's needs. The Training Team is mostly dedicated to the training activity. The SBIR Team's activities vary; the SBIR program operates on a yearly cycle, with extensive work in the fall and minimal work after the end of January. During the fall, staff is added to the team not only from the Office of User Services but from other DTIC organizations as well. When time permits the SBIR Team members assist in the Various Programs Team activities.

Tools. The Training Team utilizes a training room equipped with cathode ray tube (CRT) terminals and an electrohome. It also maintains training and reference manuals for student use. The SBIR Team utilizes terminals for ordering documents and dedicated phone lines; otherwise, they utilize the tools

FIGURE 2-7. OFFICE OF USER SERVICES ORGANIZATION CHART



and resources of the other directorates. The remaining Office of User Services functions are performed without the use of any specific support systems.

Organizational Interactions. With the exception of the SBIR program, which works with the Micrographics and Publications Divisions, the Office of User Services deals with all the other DTIC organizations in a mostly nonroutine mode. By definition, the office deals extensively with users. It works with a contractor on a regular basis for organizing the annual conference.

Future Plans. DTIC is developing a plan to increase its marketing efforts, but the plans are not yet formalized. Plans call for the Office of User Services to absorb two functions – Defense Research, Development, Test, and Evaluation (RDT&E) On Line System (DROLS) Registration and User Assistance – from the Management Support Office of the Directorate of Telecommunications and ADP Systems.

Regional Offices

DTIC maintains a regional office in Boston, Massachusetts and in El Segundo, California. Both offices are staffed by two DTIC employees who report to the Director of User Services. These regional offices provide as many DTIC services as possible in the local area and they "market" DTIC's products and services.

In performing these missions, the field offices provide a variety of functions, which include:

- Performing searches for local users who do not have direct online access themselves and assisting in query formulation for those who do but still require assistance
- Ordering documents
- Providing reference services
- Serving as an intermediary for local users with DTIC users over administrative issues such as registration, export control, etc.
- Assisting with the SBIR Program
- Providing training assistance
- Conducting briefings and other public relations activities
- Reproducing microfiche from their collection of unclassified/unlimited documents.

Tools. The most critical tools for the regional offices are their dedicated-classified terminals and printers which are extensively used. These offices receive copies of all unclassified/unlimited microfiche and have microfiche

reproduction equipment available. Additionally, they make use of all DTIC printed reference material such as Dissemination Authority Lists (DAL) and the DTIC Retrieval and Indexing Terminology (DRIT). Access to DTIC databases and files is limited to the four primary databases (plus online ordering). They do not access other files such as the Request Processing (RP) Order History, or Acquisitions files. They also do not have DGIS access.

Organizational Interactions. In performing their missions, both regional offices work frequently with most of the elements of DTIC; this includes up to as many as 20 telephone conversations a day. The most frequent contacts are with registration, order processing, and DROLS operations organizations. Most of these conversations relate to assisting a user with a problem or needing information.

Future Plans. DTIC is considering an increase in the number of field offices.

OFFICE OF SYSTEMS MODERNIZATION (DTIC-R)

The Office of Systems Modernization is newly created and has not yet been formally staffed. Currently, the functions are being performed as collateral responsibilities by a task group of three employees who are also continuing their permanent duties.

The mission of the Office is to advise the Administrator on the "management, planning, coordination, integration, and implementation of the DTIC System Modernization Project." That Project encompasses the overall modernization of DTIC's support systems. One of the first tasks of the Office is to provide baseline status of these systems to be used for evaluating and developing a project management plan for the development of replacement systems.

As the project manager for DTIC's modernization effort, the Office will provide overall project coordination through the offices and directorates. Individual projects will continue to be directed by the responsible office and directorate.

Other activities of the task group currently include further planning of the Office's organization, operations, and functions.

Organizational Interactions. The Office will work most closely with the Directorate of Telecommunications and ADP Systems, the Office of Information Systems and Technology, and the Office of Policy, Plans, and Resource Management, but will interact with all organizational elements on an ad hoc basis governed by the needs of individual modernization projects.

OFFICE OF INSTALLATION SERVICES (DTIC-W)

The Office of Installation Services performs a variety of centralized administrative business functions for other elements within DTIC. Those functions include handling procurement requests, contracting support, personnel services, travel requests, building requests, property control, leave requests, forms, records, publications management, safety and health issues, privacy act requests, training requests, the DTIC library, office automation efforts, and supply requests.

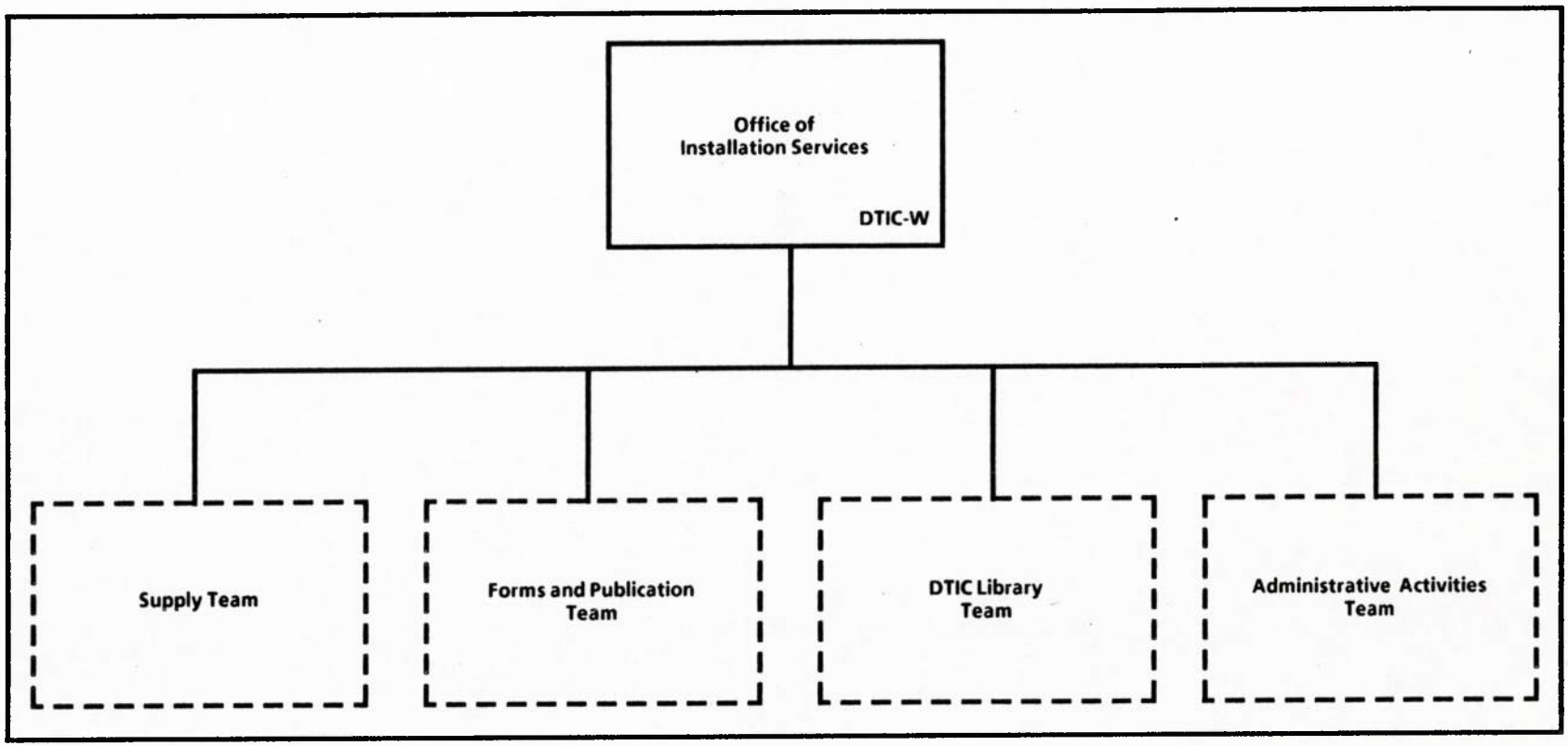
This Office is not organized formally at lower levels. There are four informal teams as depicted in Figure 2-8: (1) supply, (2) forms and publications, (3) DTIC library, and (4) administrative activities (two management analysts who report directly to the Director and perform administrative or support activities that do not fall logically into any of the other three teams).

Tools. The DTIC Library has an IBM PC allowing users to access remote bibliographical systems via a dial-up modem to search and retrieve bibliographies. The PC has accounting, spreadsheet, database management, and word-processing capabilities. This office is responsible for acquiring numerous tools used by other principal staff elements (PSEs); for example, the Hewlett Packard PC, a hygrometer, and microfiche readers.

Organizational Interactions. Project work in support of various DTIC organizations causes this Office to work with all DTIC organizations. Administrative activities lead to extensive contact with external organizations including, vendors, users, and other Government agencies.

Future Plans. This Office will coordinate implementation of the DLA Office Automation System (DMINS) for DTIC. It also controls (within DTIC) and coordinates (with the Defense Administrative Support Center [DASC]) completed Requests for Personnel Action (SF-52) and Justification for Filling Position (Form 462) from the Office of Policy, Plans, and Resource Management (DTIC-L).

FIGURE 2-8. OFFICE OF INSTALLATION SERVICES ORGANIZATION CHART



OFFICE OF INFORMATION SYSTEMS AND TECHNOLOGY (DTIC-E)

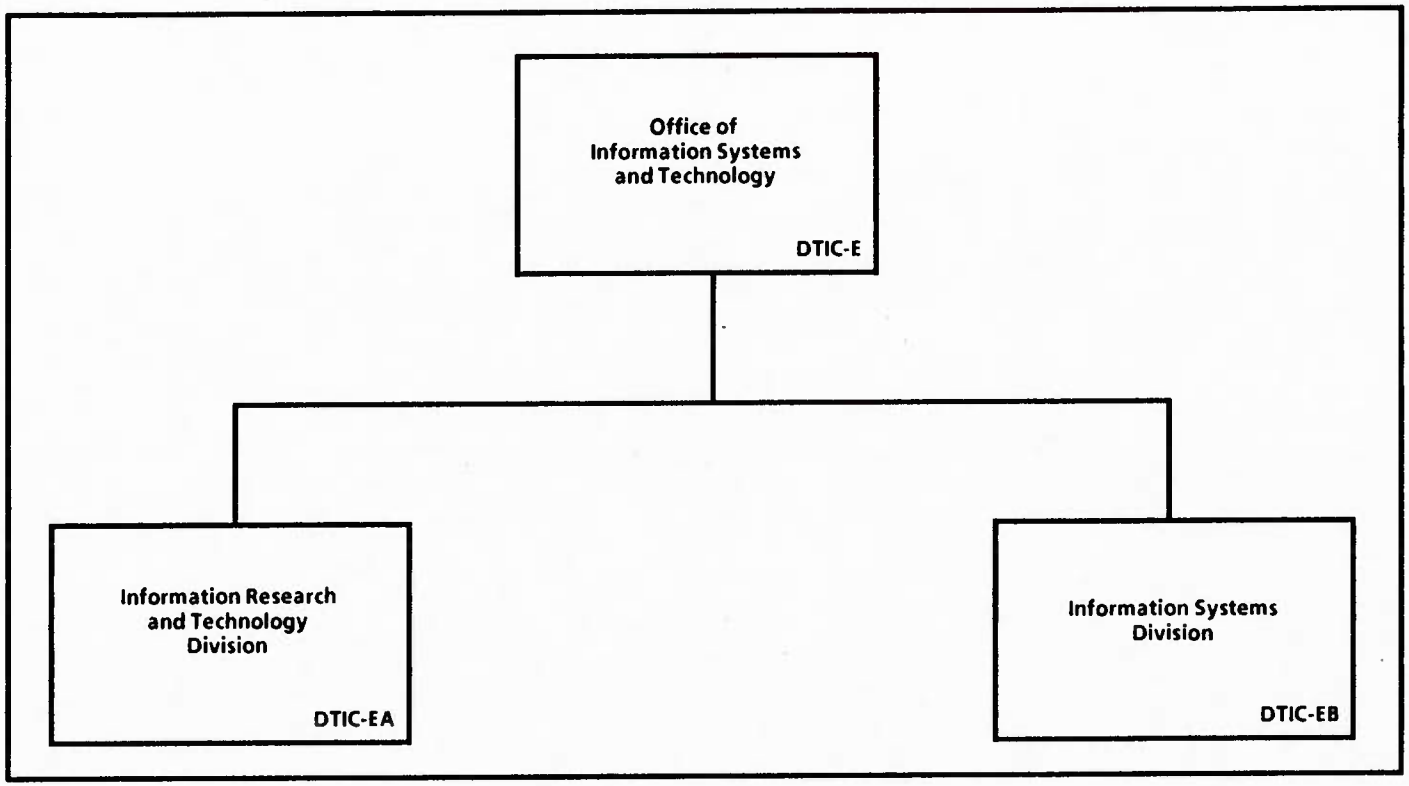
The Office of Information Systems and Technology is divided into two divisions (shown in Figure 2-9): the Information Research and Technology Division (DTIC-EA) and the Information Systems Division (DTIC-EB). The distinction between the divisions is more administrative than functional, both perform similar project oriented work. The Office is responsible for two major areas: the first is supporting the DTIC mission of being the DoD focal point for the development of new areas of information systems technology; the second is assisting the directorates and the other offices in the development of new technology for the direct support of their operations. This Office is responsible for investigating, evaluating, and making recommendations regarding Information System Change Requests (DTIC Form 372s) submitted by other DTIC organizations.

Tools. The Office makes use of several microcomputers including one MacIntosh with a laser printer. These computers are used to perform project work (programming) and support functions such as word processing and graphics production. The Office operates a DEC VAX minicomputer which supports the DGIS.

Organizational Interactions. Project work in support of various DTIC organizations causes this Office to work with every organization in DTIC. Project work also leads to extensive contact with external organizations including vendors, users, and other information suppliers.

Future Plans. A reorganization is planned which will reassign the responsibilities of the two divisions, and remove the function of evaluating the DTIC Form 372.

FIGURE 2-9. OFFICE OF INFORMATION SYSTEMS AND TECHNOLOGY ORGANIZATION CHART



DIRECTORATE OF TELECOMMUNICATIONS AND AUTOMATED DATA PROCESSING SYSTEMS (DTIC-Z)

The Directorate of Telecommunications and ADP Systems is responsible for developing and executing automated procedures. It is organized into the Director's Office, two divisions with two branches in each, and two offices. Two of the branches have four informal teams each and the other two branches have three informal teams each. The elements of this Directorate are shown in Figure 2-10 and described below. Figure 2-11 illustrates the major interfaces of this Directorate. The Directorate will be reorganized in the near future, as directed by DLA-Z, to more closely resemble DLA organization of Office of Telecommunication and Information Systems Offices.

Management Support Office (DTIC-ZM)

The Management Support Office of this Directorate is the primary contact point for potential and active users of the DROLS. It provides potential users with the requirements and procedures for becoming DROLS users, and assists users with problems. Based on the nature or difficulty of the problem with the DROLS system, this Office will consult with the appropriate DTIC organizational element or occasionally refer the user to the appropriate DTIC personnel. This function is one of the most important performed by this Office and constitutes the bulk of its activities. Nominally, the Management Support Office implements and monitors ADP systems plans and procedures. In addition, it develops requirements for additional resources – equipment, space, and personnel – and provides administrative support for the Directorate. Because of staff shortages in this Office, however, these responsibilities are actually performed by the other organizational elements at the division and branch management levels.

Tools. A terminal is used to enter data into the DTIC ADPE Inventory System operating on the Defense ADPE Time-Sharing Service System.

FIGURE 2-10. DIRECTORATE OF TELECOMMUNICATIONS AND ADP SYSTEMS ORGANIZATION CHART

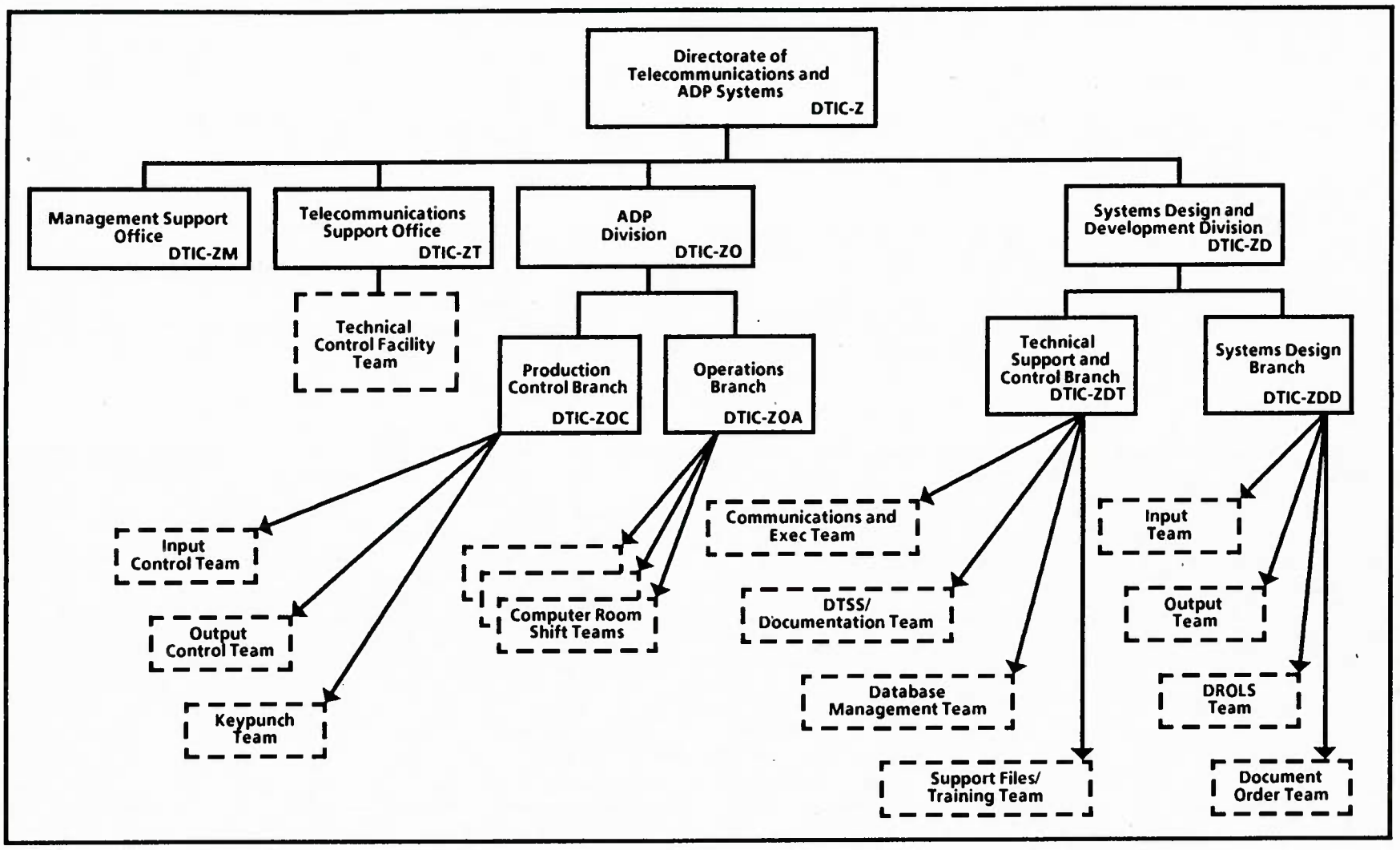
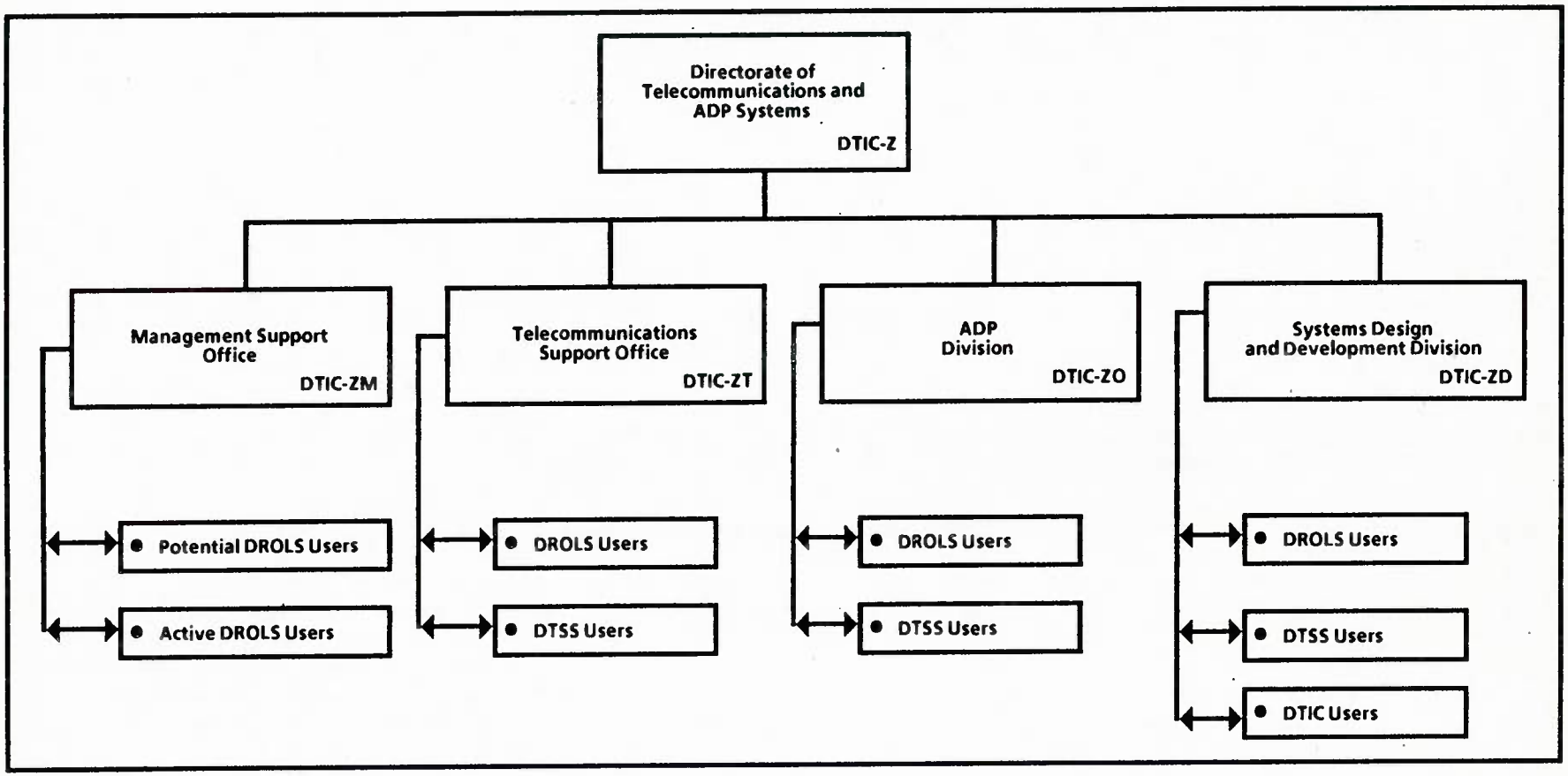


FIGURE 2-11. DIRECTORATE OF TELECOMMUNICATIONS AND ADP SYSTEMS INTERACTIONS



NOTE – Interactions within Directorate and among Directorates are not illustrated, as these organizations work with all DTIC organizations.

Organizational Interactions. The Management Support Office works with registered DTIC users as well as potential users. Additionally, its personnel consult with appropriate organizational elements of DTIC.

Future Plans. DROLS-related functions will be transferred to the Office of User Services.

Telecommunications Support Office (DTIC-ZT)

The Telecommunications Support Office is the primary focal point on communications facilities for potential and active users of DTIC, as well as DTIC's in-house staff. It manages all equipment and hardware resources affecting telecommunication capabilities. Its functions include: (1) performing feasibility analyses to identify and determine the appropriateness of alternatives to upgrade or expand DTIC's communication capabilities, and proposals to access DTIC's databases; (2) reviewing, approving, and overseeing the installation of new or additional DROLS and standard telephone communications equipment requested by DTIC in-house users; (3) reviewing and approving new DROLS users' communication configurations and implementing the DTIC portion of the approved configurations; (4) implementing DROLS security procedures and safeguarding the security of classified communications links to and from DTIC; (5) assisting in installing DROLS terminals; (6) consolidating communications-related budgetary data from other DTIC offices and directorates and verifying and validating budgetary requests for communications equipment; and (7) certifying telephone and other communication billings.

For all communication security (COMSEC) equipment and resources and those activities involving access to classified communications lines, this Office reports directly to the Administrator of the COMSEC Office at Kelly Air Force Base, Texas.

Two people staff the Technical Control Facility Team within this Office. This Team operates and monitors all the COMSEC equipment and accesses to DTIC's classified data. This Team works during the same hours that DROLS is operational.

Tools. COMSEC equipment, encrypting devices, communications monitoring devices, telecommunications ports and modems, electronic communication devices including patch-and-test equipment as well as standard telephone equipment are among the tools utilized by the Telecommunications Support Office. Additionally, computerized listings of users, their telecommunication nodes and system identification characteristics, the telecommunication facilities implemented for that user, and a host of telecommunication systems details are used by this Office.

Organizational Interactions. This Office interfaces with DTIC personnel, with DROLS and DTSS users, and with other Federal agencies responsible for COMSEC matters, including the National Security Agency (NSA).

Automated Data Processing Division (DTIC-ZO)

Two branches in the ADP Division are responsible for scheduling and operating DTIC's computer applications. The Production Control Branch with three informal teams and the Operations Branch with three shift teams are described below.

Production Control Branch (DTIC-ZOC)

Ongoing production jobs, special production jobs, and test jobs are scheduled by the Production Control Branch before being submitted to the Operations Branch for actual execution on the computers. The Input Control Team ensures that computer jobs have the required resources and are complete before being scheduled for execution. The Output Team checks the results of the computer jobs (after they have been executed in the Operations Branch) for completeness, timeliness, physical quality, and adherence to user requests. The Output Team then packages unclassified remote-ordered demand and subscription bibliographies and distributes them as necessary. A job is rerun when necessary. The Keypunch Team keypunches the required job-stream cards and the data input cards. This keypunching is in addition to the large volume of keypunching data received from other DTIC organizations.

Executive schedulers and programmer-analysts in this Branch perform additional activities. The executive schedulers work with programmers and operations personnel to improve the workflow and reduce backlogs, compile information for

audits of management reports, maintain documentation and program libraries, and develop schedules. Programmer-analysts isolate errors and take corrective action when computer system problems occur, perform restarts, work with programmers and users in developing new and improved applications, and reconfigure mass storage when overflows occur. Additionally, programmer-analysts monitor the operational implementation of new or revised ADP systems with the Operations Branch.

Tools. The Production Control Branch utilizes manually maintained schedules, manually maintained runbooks describing required procedures for production jobs, instruction sheets, and special instructions written onto schedules as well as various compiler reports as reference tools. Cold sealers are used to wrap unclassified materials. At present, the preparation of a large number of computer job-stream instructions, as well as user data, is done with keypunch card machines. Many job-streams exist online in the computer libraries, and they are updated online as required. Listings of computer tapes containing data are also used, as are forms that indicate which tapes are to be used and which are to be recycled.

Organizational Interactions. This Branch works with the Operations Branch, Programming Division, and with the other directorates and offices. The Branch also coordinates with users as required.

Future Plans. The keypunch card machines are scheduled to be removed from DTIC and replaced by terminals by the end of this year.

Operations Branch (DTIC-ZOA)

The Operations Branch is responsible for operating DTIC computer hardware. There are three shifts that operate the computer and make decisions ranging from delaying production jobs to terminating them. Operations work also includes making tapes and other peripherals available to the computer as needed. While the system utilizes mass storage devices, there is still extensive reliance on tapes. The number of tape mounts average 400 during the night shift, 325 during the evening shift, and 275 during the day shift. The shift supervisor oversees the activities and decides how to continue computer processing when hardware or software problems arise. A representative list of applications for which the Operations Branch operates includes: Work Unit Information System (WUIS), Machine-Aided Indexing (MAI),

Independent Research and Development (IR&D), User Validation Request, Technical Abstract Bulletins (TAB) Reports, Inventory Suspense File, DROLS, IACs, and DTSS-based applications such as MATRIS.

In addition to operating the two Sperry computers, the Operations Branch coordinates the maintenance of the equipment with Sperry engineers, maintains libraries of primary and alternate ADP files, prepares written reports describing equipment utilization and availability, makes suggestions to programming staff for improved operating procedures, implements operational security procedures for communications equipment, and decollates and bursts completed hard copy outputs. The Operations Branch also participates in plans for ADPE modification, selection, and acquisition. There are an estimated 30 subsystems containing over 500 programs.

Tools. The Operations Branch operates two Sperry computer systems. The Sperry 1100/82 provides online access to technical and management information through DROLS. This computer is used for the bulk of DTIC's ADP production work. The second computer is a Sperry 1100/61 and is used to support additional off-line, batch processing work and the DTSS service. ADP systems development and testing is accomplished on this second computer.

Other ADPE operated by this Branch include tape drives, disk drives, the Sperry DCP 40 front-end processor, and Xerox 9700 printers. Upon acquisition of new peripheral equipment, the vendor normally supplies the hands-on training and manuals.

Organizational Interactions. The Operations Branch works with others in DTIC-Z, with users who request special and nonscheduled jobs, and with other directorates in planning equipment and software enhancements.

Future Plans. There are long-term equipment modernization plans extending to 1990.

Systems Design And Development Division (DTIC-ZD)

Two branches perform computer programming and related activities to ensure ongoing and uninterrupted execution of DTIC's computer applications. In addition, development work to add new services or products to existing computer applications is accomplished by these two branches. The two branches, the Technical Support

and Control Branch and the Systems Design Branch, with four informal teams each, are described below.

Technical Support and Control Branch (DTIC-ZDT)

The major responsibilities of the Technical Support and Control Branch are the maintenance and operation of computer systems resources. Computer systems resources include the operating systems, the telecommunication systems, the time-sharing system, system libraries, and other systems software. This Branch is organized into four informal teams called the Communications and Exec Team, Database (DB) Management Team, DTSS/Documentation Team, and Support Files/Training Team. The word "Exec" refers to the operating system of the Sperry computers.

The Communications and Exec Team assists the Operations Branch in resolving operational difficulties of telecommunications software, acquires and installs operating system libraries, and fixes system failures encountered in the operating systems and associated libraries. They work with vendors to maintain and upgrade telecommunications systems (including hardware) and are the focal contact point for Sperry systems support contractors and engineers. The Team participates in hardware acquisition by performing capacity analysis, determining equipment requirements, preparing Request for Proposals (RFPs), writing the equipment selection specifications and acting as the Contracting Officer Technical Representative for any contracts let.

In a similar fashion, the DB Management Team is responsible for the database systems software including interface routines utilized by application programs. This Team shares the task of generating and installing database systems software and libraries with the Communications and Exec Team. They assist the application programmers with applications development, troubleshoot computer operational difficulties as they pertain to database software, and fix problems with databases.

This Team also meets with DTIC functional users to identify and determine application requirements in order to establish appropriate database access.

The DTSS is operated by the DTSS/Documentation Team. They code and implement minor program modifications as well as resolve computer operational difficulties. They purge DTSS of users who no longer use it, change passwords, gather usage information, and perform administrative tasks. This Team receives all application systems program documentation developed by all of DTIC's programmers. They store all documentation of these application systems programs in a central location, catalog it, and make it available for review and study on an as-needed basis.

The Support Files/Training Team maintains the support data files and associated programs that are used by all databases. Two examples include the source hierarchy file and the Master User Address Contract (MUAC) file. This Team was placed in this Branch mainly to provide organizational balance in this Division. In maintaining the support files, this Team frequently works closely with the Input, Output, Document Order, and DROLS Teams. Another activity of this Team is training the programmer trainees.

Tools. The Sperry computers and data input terminals are used for programming or recompiling programs. The documentation storage and cataloging of application systems and programs is done manually. In some cases, the Sperry computer is used to print some management reports or listings.

Organizational Interactions. The Technical Support and Control Branch works with all other organizational elements in DTIC as required.

Systems Design Branch (DTIC-ZDD)

The major responsibilities of this Branch include maintaining computer application program code to ensure that the programs continue to function without failure or degradation, enhancing program code to perform revised functional requirements, and redesigning programs to increase operational efficiency of the applications. Additionally, this Branch participates in major new systems development by

creating and implementing new applications. The Systems Design Branch is organized into four teams, with each assigned responsibility for certain computer applications. The four teams are Input, Output, DROLS, and Document Order.

The Input, Output, and DROLS Teams support DTIC's major databases, the TR, WUIS, Program Summary (PS), and IR&D databases. These three Teams generally work with the Database Services Directorate to maintain and enhance the computer applications that support or utilize these databases. While the names of these three Teams indicate their functional assignments, programming tasks are sometimes assigned to the team that is able to absorb the additional workload, regardless of its nominal functional responsibility.

The Document Order Team generally changes or adds functions to the Document Order System from the Reference Services Branch in the Document Services Directorate. This Team implements the necessary programming changes to the computer applications that perform the ordering, billing, and shipping of the documents requested by users of DTIC.

Tools. The Sperry computers and data input terminals are used to perform the necessary systems work, such as programming or recompiling programs.

Organizational Interactions. The System Design Branch works with all other organizational elements in DTIC as required.

DIRECTORATE OF DOCUMENT SERVICES (DTIC-F)

The Directorate of Document Services is composed of 14 sections and branches within three divisions. That Directorate is responsible for all matters relating to the physical (as opposed to database representation) copy of DTIC's TR collection. These matters include document acquisition, maintaining the document collection in microform or hard copy, and document reproduction and delivery. In addition, Document Services is responsible for user registration, reference services, and the printing and binding organizations. The three divisions within Document Services are Micrographics, Publications, and Document Processing (see Figure 2-12). Those Divisions and their suborganizations are described in the sections below.

Micrographics Division (DTIC-FM)

The Micrographics Division converts the hard copy TRs received at DTIC into microfiche, maintains the microfiche, and reproduces it upon request. The Division is composed of three branches and one office whose functions are defined here. Figure 2-13 summarizes the organizational interactions of the Division.

Future Plans. The Division has approval for an organization change to incorporate binding and mailing paper copy TR orders. Implementation of the change is waiting on building modifications, currently scheduled to begin in September 1986.

Master Microform Processing Branch (DTIC-FMM)

The Master Microform Processing Branch creates the permanent master copy microfiche from the incoming TRs (including TRs in non-paper forms such as microfiche). The Branch also inspects the microfiche for quality. When a TR in DTIC's microfilm collection is ordered, this Branch converts the microfilm to microfiche.

FIGURE 2-12. DIRECTORATE OF DOCUMENT SERVICES ORGANIZATION CHART

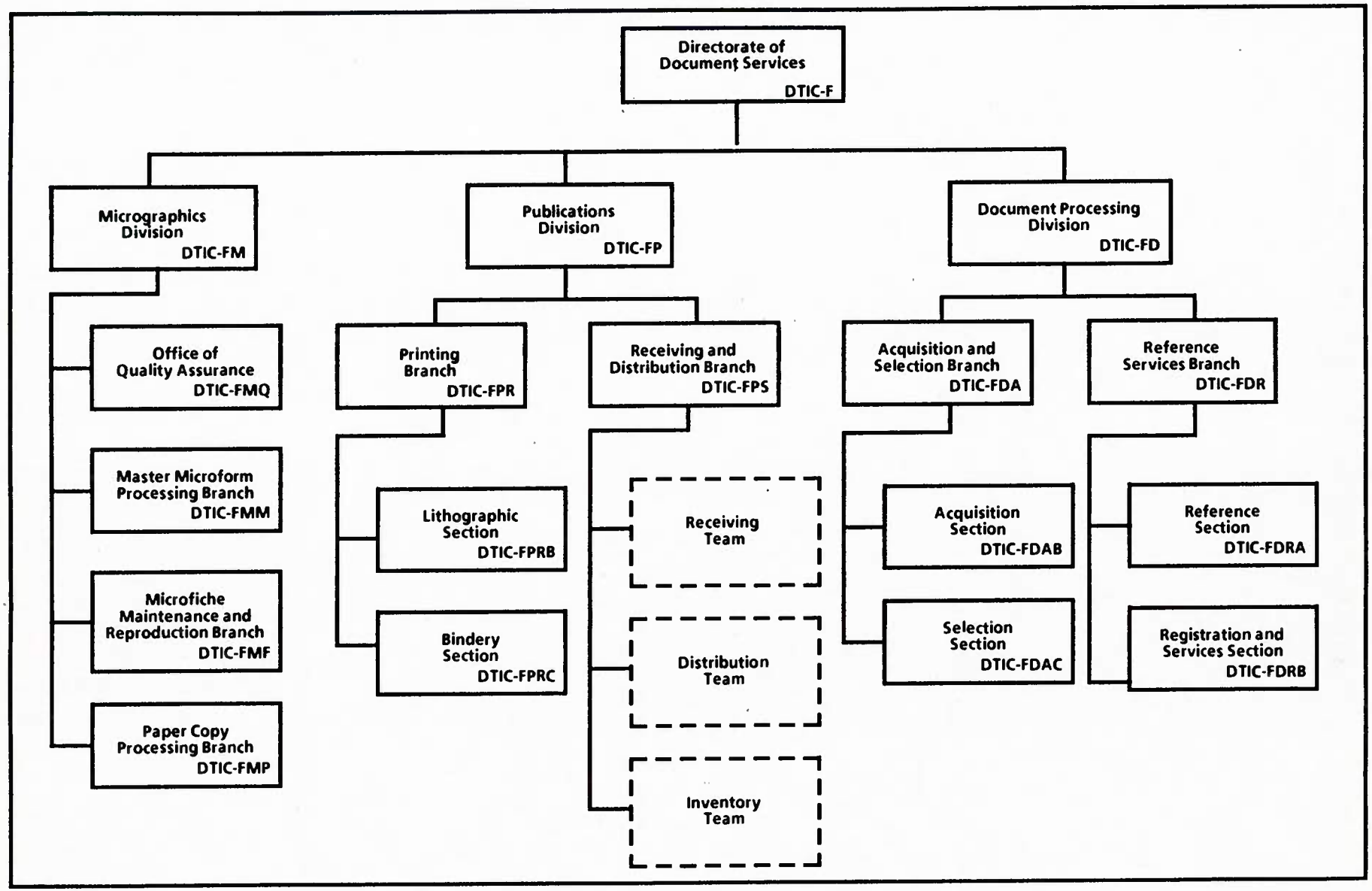


FIGURE 2-13. DIRECTORATE OF DOCUMENT SERVICES – MICROGRAPHICS DIVISION INTERACTIONS

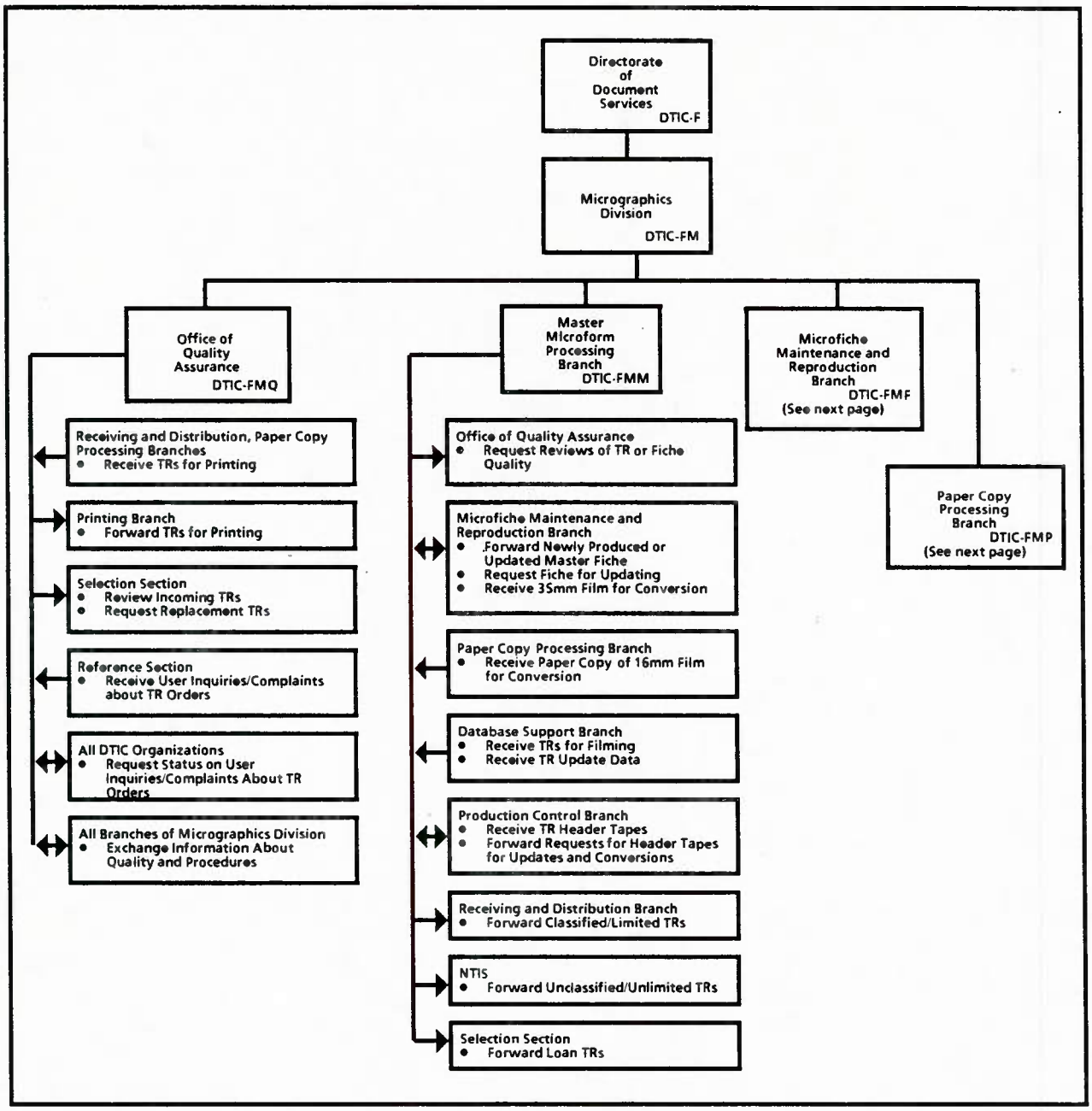
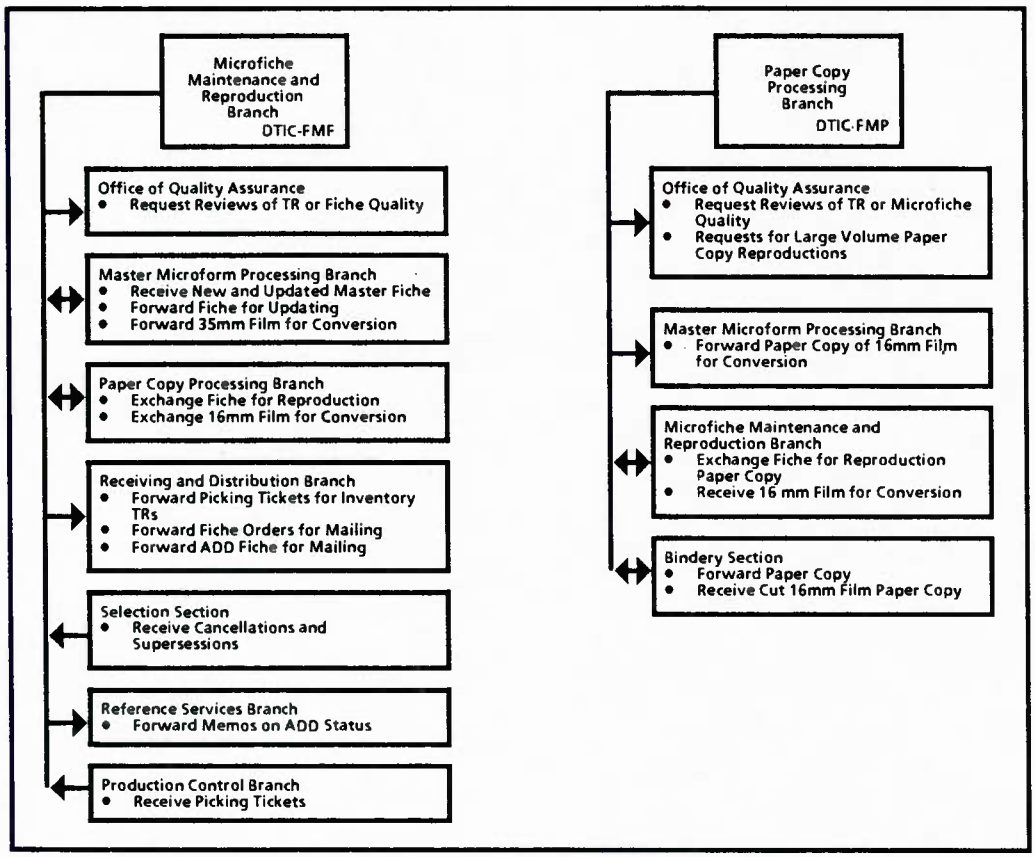


FIGURE 2-13. DIRECTORATE OF DOCUMENT SERVICES – MICROGRAPHICS DIVISION INTERACTIONS (Continued)



Tools. The Master Microform Processing Branch operates three microfiche cameras for producing the master fiche. They also operate a custom designed machine to convert 35mm microfilm to microfiche. Additionally, there is equipment to develop and inspect the microfilm. In conjunction with the cameras, the Master Microform Processing Branch uses tapes, diskettes, and listings to associate the microfiche header data to the TR.

Organizational Interactions. The Master Microform Processing Branch provides the Microfiche Maintenance and Reproduction Branch the master microfiche for reproduction and storage. They receive from either the Microfiche Maintenance and Reproduction Branch or the Paper Copy Reproduction Branch, microfiche or microfilm whose quality is too poor to reproduce. They also receive from these Branches microfilm or paper copy of TRs to convert to microfiche.

The Database Support Branch supplies to the Master Microform Processing Branch the incoming TRs to be filmed. They also supply, via the ADP Directorate, the header tapes and listings. Toward the end of each TAB cycle they will supply corrections to the headers based on reviews of the galley proofs.

The Master Microform Processing Branch submits data entry forms to the Production Control Branch to request microfiche header tapes and listings for microfilm to microfiche conversion, TR updates, and other special processes.

Microfiche Maintenance and Reproduction Branch (DTIC-FMF)

The Microfiche Maintenance and Reproduction Branch receives the newly created master microfiche from the Master Microform Processing Branch. The Maintenance and Reproduction Branch cuts and makes copies of the master fiche for a working copy and for Automatic Document Distribution (ADD). The Branch files and maintains both the master and the working copy. It pulls microfiche from the files in response to user requests. If the user requests a microfiche product, this Branch produces the necessary copies. For paper copy requests the microfiche are passed to the Paper Copy Processing Branch.

Tools. This Branch has two microfiche duplicators and collators that are used for high volume reproductions. It also uses two duplicators for low volume reproductions. The microfiche collection is stored in eight microfiche storage cabinets. Each cabinet holds 550,000 pieces of microfiche. With the exception of those microfiche classified at the Secret level, the master microfiche is stored in file cabinets in a separate archival room. The master microfiche for Secret level TRs are interfiled with the working copies. DTIC's TRs on microfilm are stored in cabinets in the branch area and in other areas within the directorate.

Organizational Interactions. The Maintenance and Reproduction Branch works with the Master Microform Processing Branch from whom it receives newly created master microfiche. It also works with the same Branch to convert microfilm to microfiche and to resolve problems with poor quality pieces of microfilm or microfiche. Its other primary interaction is with the Paper Copy Processing Branch to whom they give microfiche for "blow-back" copying. It receives back the completed microfiche for refiling. It delivers completed reproduction of orders by SBIR users to the SBIR Team.

Future Plans. A vault is being completed in which all master microfiche will be kept in a climatologically controlled environment; the vault also meets security requirements for storing classified data.

Paper Copy Processing Branch (DTIC-FMP)

The Paper Copy Processing Branch converts microfiche and microfilm into paper copy in response to user requests.

Tools. The Branch uses seven 970 copier machines that can collate paper copies from a single microfiche. Microfilm is converted to paper copy on a Copyflo reproducer.

Organizational Interactions. The Paper Copy Processing Branch receives microfiche/microfilm to be reproduced on paper from the Microfiche Maintenance and Reproduction Branch. The Paper Copy Processing Branch provides the paper copy from 16mm film that is to be converted to microfiche (after having been cut by the Bindery Section) to the Master Microform Processing Branch.

As needed, the Paper Copy Processing Branch provides the Office of Quality Assurance a copy of any TR which is to be reproduced through printing. The Paper Copy Processing Branch provides all completed paper copy work to the Bindery Section.

Future Plans. There is a plan to replace the 970 copier machines, they have far exceeded their planned life expectancy.

Office of Quality Assurance (DTIC-FMQ)

The Office of Quality Assurance performs several functions to maintain and ensure acceptable and desired levels of quality of the documents produced at DTIC. These include documents reproduced in hard copy, microfilm, and microfiche format. While the activities of this Office are not directly a part of the document pipeline, they support the pipeline activities by initiating procurement actions for: micrographic equipment, supplies, and other contracted services; testing and evaluating

experimental, prototype, and production equipment and materials; maintaining existing equipment; developing new techniques; and consulting with manufacturer's technical representatives on new micrographic systems. General guidelines, indicating what constitutes acceptable and unacceptable document quality, are coordinated and established by this Office. Additionally, they assist in resolving document quality problems identified by other elements of this Division or through user complaints.

Tools. This Office uses manually maintained logs and records to keep track of its activities.

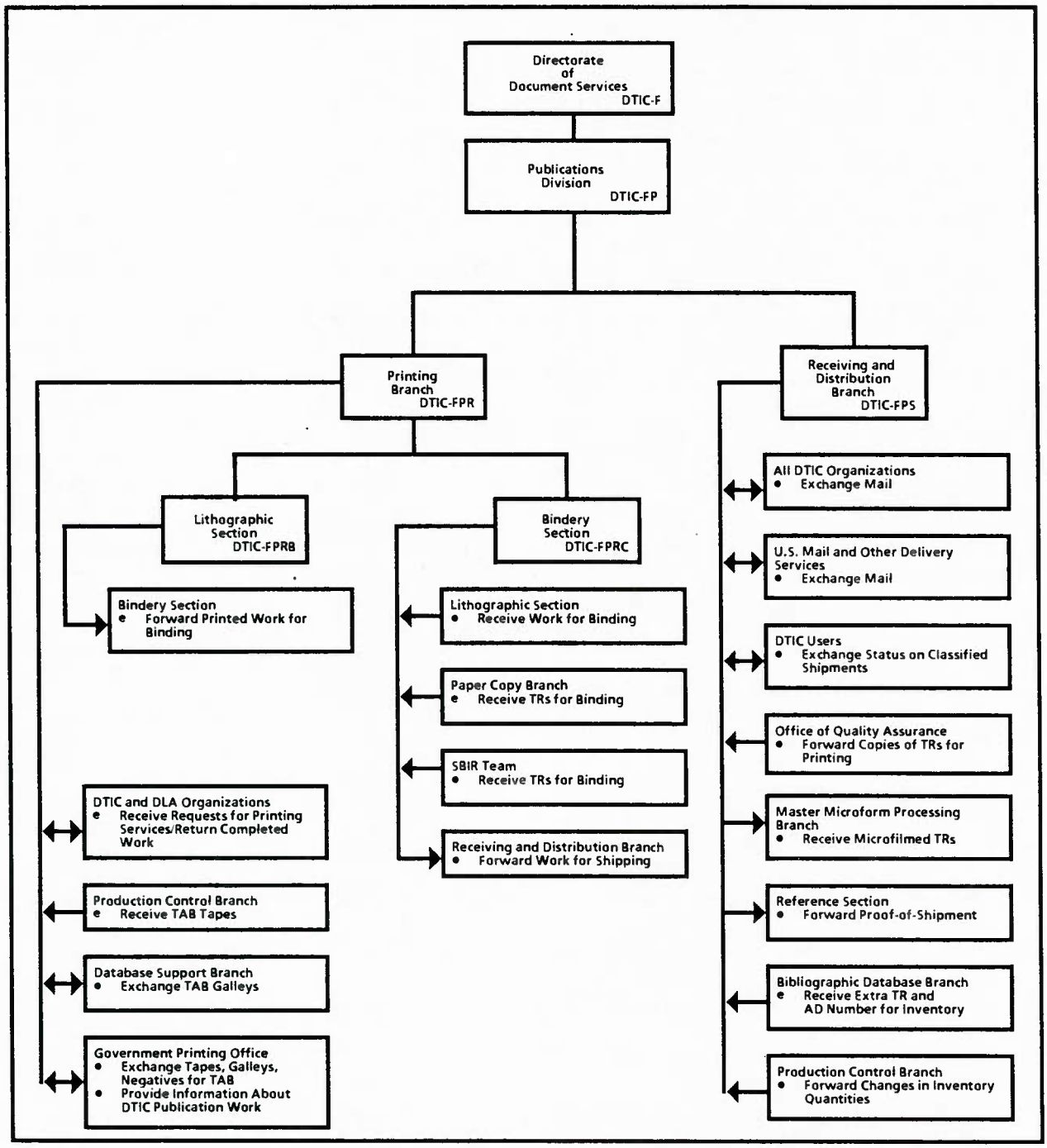
Organizational Interactions. In addition to interfacing with all other organizational elements within DTIC, the Office of Quality Assurance interfaces with micrographics vendors as well as DTIC's users. The Office also requests original copies of TRs from the Receiving and Distribution Branch or National Technical Information Service (NTIS) for large volume TR reproduction.

The Office serves as a focal point to queries from the Reference Section regarding complaints from users about orders they have not received.

Publications Division (DTIC-FP)

The Publications Division in the Directorate of Document Services produces large volume runs of documents. It is distinct in DTIC in that much of the work it performs is not for DTIC but for DTIC's parent organization, DLA. Volume printing also encompasses binding and mailing. Printing and binding are the responsibilities of the Lithographic and Bindery Sections of the Printing Branch. Mail handling (incoming, outgoing, and internal) is the responsibility of the Receiving and Distribution Branch, which is also responsible for maintaining the paper copy portion of DTIC's TR collection. Figure 2-14 summarizes the organizational interactions of the Division.

FIGURE 2-14. DIRECTORATE OF DOCUMENT SERVICES – PUBLICATIONS DIVISION INTERACTIONS



Printing Branch (DTIC-FPR)

The Printing Branch accepts printing jobs. The Branch maintains job status and answers questions regarding schedules. Through DLA it also works with the Joint Congressional Committee on Printing, which evaluates DTIC's printing capabilities on a continuing basis.

Lithographic Section (DTIC-FPRB)

The Lithographic Section operates what the Government Printing Office (GPO) refers to as a Class A print shop. It prints large-volume TRs for users, the DTIC TAB, DTIC-generated material such as the Dissemination Authority List (DAL), DTIC internal material, and DLA material. In FY85, it printed more than 52 million units (one side of a page).

Tools. The primary tools of the Lithographic Section are its 10 presses. They vary in age and manufacturer and include Harris, Davison, AM Multigraphic, and AB Dick. The Section also operates a Xerox 1075 copier. A variety of other equipment supports the presses, including cameras and metal-plate producing equipment. This Section also possesses graphics equipment (which needs repair or replacement and has limited usefulness).

Organizational Interactions. The Lithographic Section receives work from the Printing Branch. It delivers all completed work either back to the Branch or to the Bindery Section.

Bindery Section (DTIC-FPRC)

The Bindery Section binds, in one of several manners, all work received from the Lithographic Section, the Paper Copy Processing Branch, and the SBIR Team. They also cut TRs reproduced on the Copyflo microfilm machine. Their cutting operations also include cutting stocks of odd size paper to be used by the Lithographic Section in printing.

Tools. The Bindery Section maintains a variety of collating and binding equipment including: three large multi-page collators, two page folders and a signature collator, a binder, paper cutters and trimmers, paper drills, and hand and power staplers.

Organizational Interactions. The Bindery Section receives their work from either the Lithographic Section, the Paper Copy Processing Branch, or the

SBIR Team. All completed work is sent to the Printing Branch, the Receiving and Distribution Branch, or returned to the SBIR Team as appropriate.

Receiving and Distribution Branch (DTIC-FPS)

The Receiving and Distribution Branch is divided into three informal teams: the Receiving (Mail Room) Team, the Distribution Team, and the Inventory Team. The Branch is responsible for all mail handling. The Receiving Team receives, opens (to the extent necessary), sorts, and routes all incoming mail. This includes separating incoming TRs from other DTIC mail. The Distribution Team wraps and franks outgoing mail as needed. They are responsible for wrapping classified material in accordance with DoD regulation and maintaining logs on the sending and receiving of this material. DTIC production material that is packaged and shipped by the Branch includes:

- Technical Abstract Bulletin (TAB)
- Current Awareness Bibliographies (CAB)
- Technical Report (TR) demand orders
- Automatic Document Distribution (ADD)
- Manpower and Training Information System (MATRIS) publications
- Demand bibliographies
- Classified bibliographies generated online by users
- Management database reports.

The Inventory Team maintains DTIC's TR paper copy inventory. The Team receives incoming paper copy TRs and stores them. They are provided to users on request as long as supplies last. Excess copies which are not requested are discarded or burned based upon their classification and limitation levels. The Team also maintains the copies of DTIC generated material (e.g., DAL or "How to Get It").

Tools. The Branch uses few support systems tools. The Distribution Team uses cold sealers to wrap unclassified material. They use a manual file to track classified material which has been shipped. The inventory is maintained by

using listings, picking tickets, and forms to update the Request Processing (RP) File.

Organizational Interactions. Incoming mail is received from the United States Postal Service (USPS) and other delivery services. It is routed to all organizations within DTIC. The Branch receives outgoing mail from all organizations within DTIC and gives it to the USPS. The Distribution Team also works with users in regards to receipt of classified mail.

The Inventory Control Team receives incoming TRs from the mail room and the Master Microform Branch; it provides outgoing TRs to the Distribution Team. The Inventory Control Team provides inventory data to the Production Control Branch for input into the RP system. Both the Inventory Control Team and the Distribution Team submit the right hand portion of picking tickets to the Reference Section.

Document Processing Division (DTIC-FD)

The Document Processing Division is composed of two branches that in turn are composed of two sections. The Acquisition and Selection Branch is responsible for acquiring and approving TRs to be added to DTIC's collection. The Reference Services Branch is responsible for reference services and user registration. The division level and the Acquisition and Selection Branch operate with only the division and branch managers along with secretarial support to provide primarily administrative and managerial functions. The Reference Services Branch has additional staff which perform specific functions. Figure 2-15 summarizes the organizational interactions of this Division.

Acquisition and Selections Branch (DTIC-FDA)

The branch manager performs administrative/managerial functions for the Acquisition and Selection Sections.

FIGURE 2-15. DIRECTORATE OF DOCUMENT SERVICES – DOCUMENT PROCESSING DIVISION INTERACTIONS

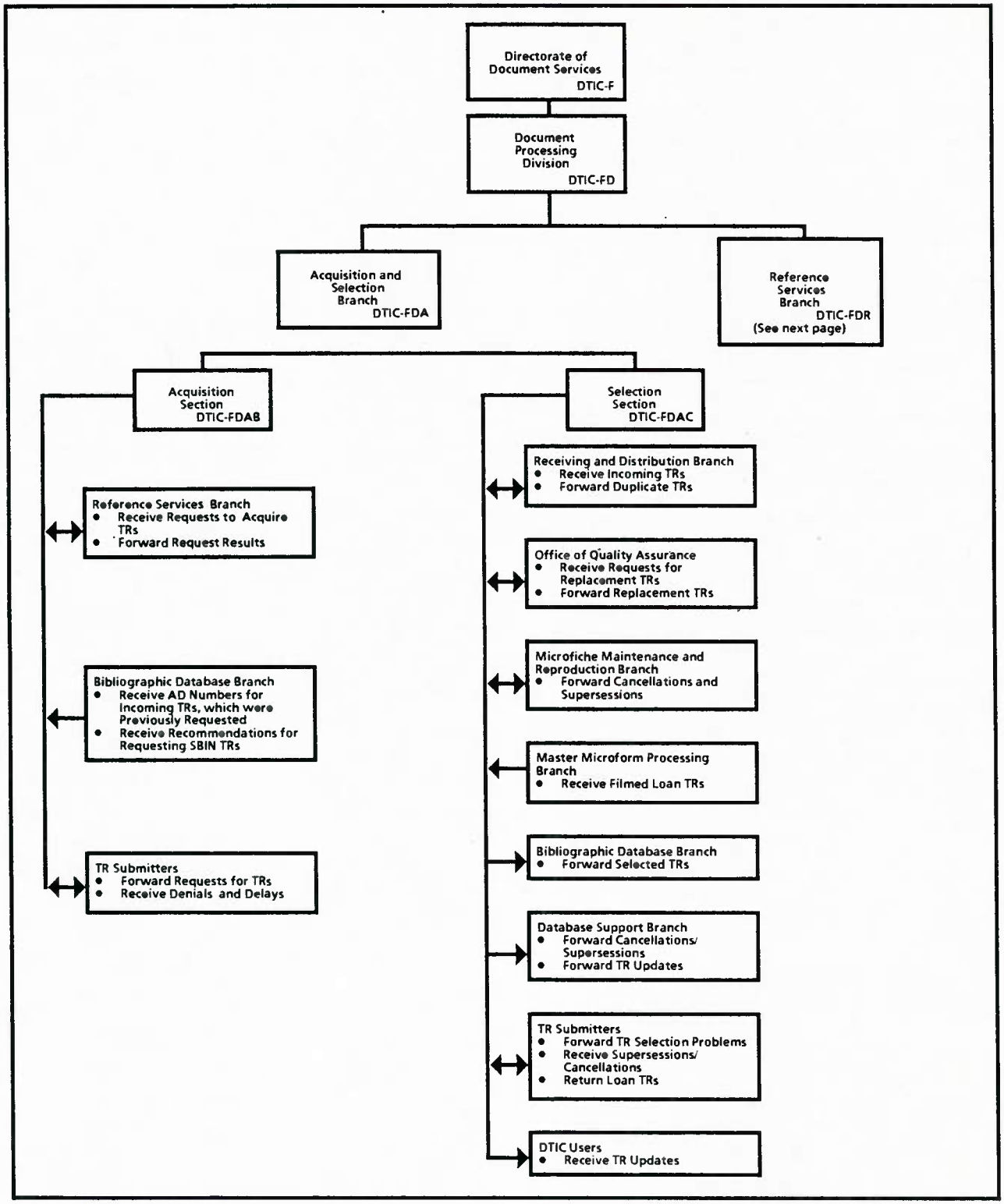
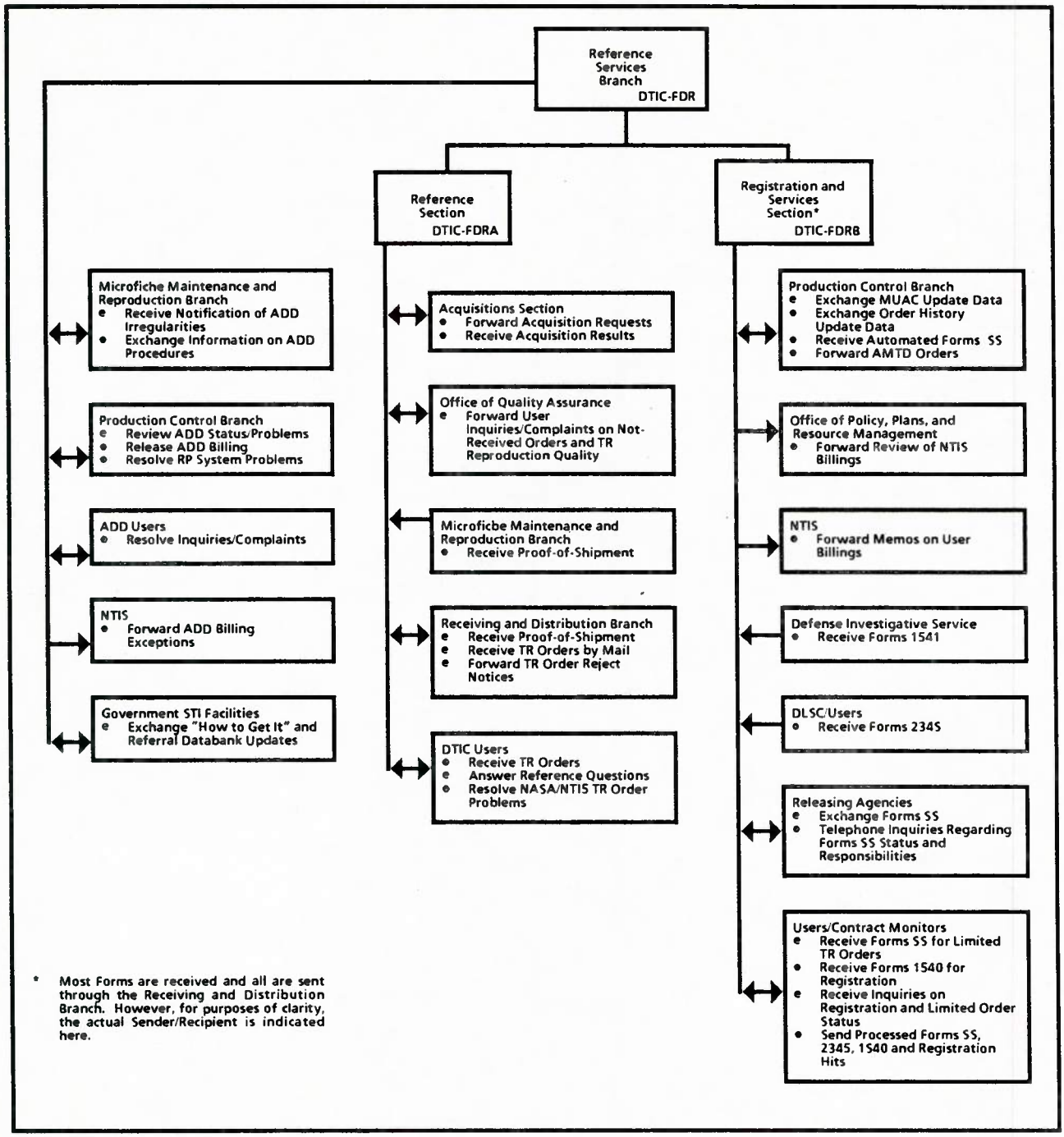


FIGURE 2-15. DIRECTORATE OF DOCUMENT SERVICES – DOCUMENT PROCESSING DIVISION INTERACTIONS (Continued)



Acquisition Section (DTIC-FDAB)

The Acquisition Section is responsible for identifying potential TRs to be added to the TR collection and contacting the document source to request submission of the document. DoD regulations require all DoD-funded research contracts submit their TRs to DTIC. However, DTIC maintains an active acquisitions effort to identify potential additions to the collection. Once DTIC decides to acquire a document, they verify that it is not present in DTIC, and then send a letter to the controlling source of the document. The acquisition effort is completed when DTIC receives the document or eventually fails to obtain it.

Tools. The AQ database is the primary tool of the Acquisition Section. The database currently contains more than 11,000 records representing all outstanding requests and any previous requests which did not result in a successful acquisition. Prior to the development of the AQ database in 1982, acquisition records were maintained in the 3x5 card catalog of DTIC documents. These are now referred to only when older TRs are requested.

Organizational Interactions. Within the Document Services Directorate, Acquisitions mostly deals with the Reference Section.

The Bibliographic Database Branch notifies the Acquisition Section when requested TRs are received at DTIC. The Acquisition Section in turn notifies the Reference Section.

The most significant interaction is between the Acquisition Section and organizations which supply TRs to DTIC in the form of request letters and responses. In the past, Acquisition has also worked with DoD libraries to borrow portions of their collections which DTIC does not possess. This tends to be older material of historical value.

Selection Section (DTIC-FDAC)

The Selection Section is responsible for reviewing incoming TRs for content and physical quality, and approving their incorporation into the collection. The content review consists of a brief assessment of the subject matter to ensure its appropriateness to the collection. More than 98 percent of the incoming TRs are accepted. The physical review is more thorough; it assesses page count (completeness), readability, and distribution statements. Any document that does not

pass is set aside and the source is requested to correct the problem. Some TRs that pass the reviews may have processing instructions attached. Selected TRs are forwarded to the Bibliographic Database Branch in the Directorate of Database Services.

The Selection Section is also responsible for acquiring older documents for which DTIC's microfilm copy has deteriorated. When that occurs, the Office of Quality Assurance notifies the Selection Section which contacts any known possessor of the document to obtain a permanent or loan copy.

A collateral duty of the Selection Section is to perform primary U.S. distribution of new TRs released by North Atlantic Treaty Organization (NATO) countries.

Tools. The Selection Section uses a Texas Instruments Silent 700 terminal to perform duplicate checks on documents. The Section maintains a number of manual files including TRs on request for microfilm conversion and SBIN AD number changes.

Organizational Interactions. The mail room of the Receiving and Distribution Branch delivers all incoming TRs to the Selection Section. The Office of Quality Assurance notifies the Selection Section whenever an older document needs to be obtained for conversion from microfilm to microfiche. The Selection Section forwards to the Bibliographic Database Branch one or two copies of all selected TRs, and calls or writes document sources whenever a problem is encountered with a submitted TR.

Reference Services Branch (DTIC-FDR)

The Reference Services Branch is composed of two sections: Reference, and Registration and Services. There are also two special assignment positions. The first is responsible for production of the "How to Get It" reference book and the "Referral Databank" which is available both in printed and database form. The second special function within the Reference Branch is monitoring the RP system and the ADD program. Monitoring the RP system entails reviewing daily listings to determine the success of the previous night's runs. The monitor also handles user complaints and reviews and authorizes user billings through NTIS. The ADD pro-

gram monitoring primarily consists of production status oversight, as most aspects of production are handled by the Reference Analysis Branch or the Microfiche Maintenance and Reproduction Branch. This position also serves as the focal point for ADD program billing, user questions, and complaints.

Tools. The Reference Services Branch has recently acquired an IBM PC-XT which will be used to publish future editions of the "How to Get It" and Referral Databank.

RP and ADD program monitoring relies on listings generated by DTIC's computers overnight. Billing information from NTIS is in listing form.

Organizational Interactions. Updating both reference tools requires contacting an extensive list of external sources to verify the data. Updating and printing information in the Referral Databank within the TR database is performed by the Database Support Branch.

Coordination of the ADD program entails attending ADP operational meetings and resolving distribution problems with the Microfiche Distribution Branch. There is also extensive user contact regarding bills and delivery. Issues regarding the adequacy of the coverage are resolved between the user and the Retrieval Analysis Branch.

Monitoring the RP system primarily entails work with the ADP Division if it appears an update was not run correctly. The monitor also works with the Reference Section regarding rejected proof-of-shipments. Resolving billing issues requires work with users and ADP operations.

Future Plans. Beyond publishing the reference books from the PC, there are no major projects currently planned.

Reference Section (DTIC-FDRA)

The Reference Section has two primary functions. The first is actual reference services. Reference specialists will attempt to provide responses to any user query. These queries generally relate to obtaining Government and DoD information. Unlike most DTIC services, this service is available to the general public.

The second service is document ordering. The Reference Section accepts document orders both by mail and over the phone. To order documents users must be "registered." The Reference Section will attempt to identify a document from even a

vague citation by searching DROLS and the other auxiliary files (AQ and card catalogs). The Reference Section also enters data for "Proof-of-Shipment" for documents mailed to users and also receives user complaints regarding document ordering. They either resolve the problem or initiate a reorder. They maintain records on complaints.

Tools. Performance of the Reference Section duties requires the use of a number of reference sources. DTIC's "How to Get It" and Referral Databank are two primary ones. Others are reference books obtained from other organizations and internal procedures.

Identifying documents relies on the computer and card catalog indexes to the document collection. Document ordering uses the RP system. Reference Services has access to one terminal for that system.

Organizational Interactions. The Reference Section interacts frequently with the user community. Within document ordering, the Reference Section reviews orders from NASA which are submitted monthly and keypunched by the Production Control Branch. The Reference Section submits to the Acquisition Section the citation of any requested TR which is not at DTIC, and receives the AD number when the TR is received. The Reference Section also enters proof-of-shipment data given to them by the Receiving and Distribution Branch, Microfiche Maintenance Branch, or SBIR group. The Reference Section works with users and all other DTIC organizations that participate in the document ordering process.

Future Plans. The Reference Services Section plans to use the DGIS to access additional information.

Registration and Services Section (DTIC-FDRB)

This Section is responsible for maintaining user registration and access authorization for DTIC services. That function includes maintaining records on a variety of items including:

- Addresses
- User classification levels
- Facility clearance levels
- Authorized contracts
- Authorized access by fields and groups
- Terminal information for DROLS users.

While DTIC provides many services to unclassified users and maintains unclassified TRs, its ability to disseminate limited and classified material sets it apart from most information centers. The registration system controls that access. When a classified user is registered, three aspects of the clearance are established: the user's classification needs; the Defense Investigative Service (DIS) verification of the user's facility clearance level; and the user authorization to access Secret material only within certain subject areas. Subject area access is controlled by the fields and groups - broad categories such as military science or chemistry. When registered, a user is approved for a set of fields and groups. The Special Analysis Branch assigns fields and groups to every TR input, and when a user orders a document, the computer matches the user's approved fields and groups (and other factors) to those on the document to determine whether the user can receive the document.

A second function of the Registration and Services Section is releasing limited or classified documents to requesting users. For example, if a contractor requests a TR that is within his approved fields and groups but has a "Government Use Only" limitation, the contractor must get specific permission to receive the document by submitting to DTIC a DTIC Form 55. DTIC forwards the form to the authorizing agency for a decision. Based on the decision, DTIC either sends the document or the disapproved DTIC Form 55 to the requester. This process of releasing limited documents is complex and lengthy, frequently taking weeks, and DTIC cannot force a decision from the authorizing agency.

The Export Control Act, which prohibits releasing technologically significant TRs to uncertified sources, is enforced at DTIC by the registration process. The Registration and Services Section coordinates the Automatic Magnetic Tape Distribution (AMTD) Program. That program provides a biweekly set of incoming TR citations to a small number of users.

Tools. The Registration and Services Section relies on the MUAC file to maintain all user status. Data entry is through forms keypunched by the Production Control Branch, and output is primarily printed listings. The Registration and Services Section accesses the DTIC Form 55 prevalidation file through a terminal where information regarding user access to classified TRs can be displayed. The MUAC file is the basis for generation of the DAL, which is distributed within DTIC and externally, and is the primary tool for verifying user access. Most of the information in the MUAC is supported by two paper copy files containing the original forms. There are also 3x5 card files that contain selected cross-reference information.

Organizational Interactions. The Registration and Services Section provides the Production Control Branch with forms to keypunch for the MUAC file update. They receive the forms back along with listings to verify the results. From the Management Support Office they receive information about user access to DROLS terminals which is entered into the MUAC. Registration works extensively with external organizations including users and releasing offices. They also receive facility clearances from DIS and export control certifications from the Defense Logistics Services Center (DLSC).

DIRECTORATE OF DATABASE SERVICES (DTIC-H)

The Directorate of Database Services maintains the databases relating to STI. Currently, DTIC has three active databases: the TR database containing citations with abstracts of more than 1.2 million TRs generated from DoD-sponsored RDT&E projects; the WUIS containing more than 190,000 records describing the status of DoD-sponsored projects (past and present); and the IR&D database containing descriptions of more than 72,000 research projects independently undertaken by DoD contractors. A fourth database – the Program Element Descriptive Summaries database (PEDS) – is being developed to provide RDT&E planning information based on DoD Component budget submissions to Office of the Secretary of Defense (OSD). The PEDS database is a replacement for the RD-5 (Program Summary) database, which is available for use, but no longer actively updated.

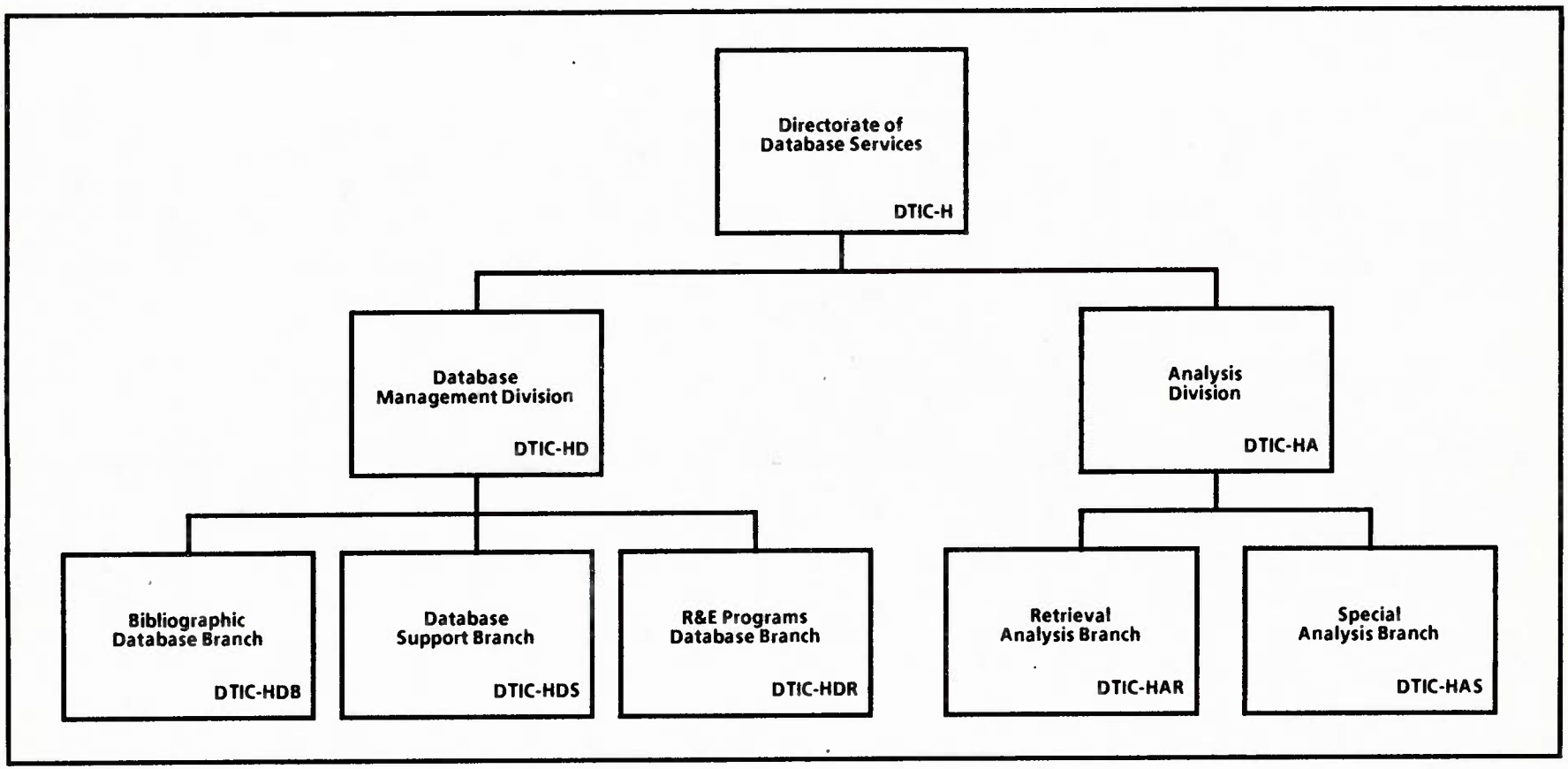
The Directorate establishes and maintains all data input into these databases, including determining subject content, physical accuracy, and data elements captured. These responsibilities also require the Directorate to establish input standards for DTIC and external contributors. The Directorate provides retrieval access to the data by generating printed bibliographies and specialized reports. To perform these functions the Directorate is divided into two divisions, the Database Management Division and the Analysis Division.

The Database Management Division (DTIC-HD) is generally responsible for input and maintenance of the databases, while the Analysis Division (DTIC-HA) is responsible for the subject content of the data both from an input and an output point of view. Figure 2-16 shows the organization.

Database Management Division (DTIC-HD)

The Database Management Division enters data and maintains the databases. In FY85 they entered more than 47,700 new items and modified more than 160,000 current records. This entry is performed through Remote Terminal Input

FIGURE 2-16: DIRECTORATE OF DATABASE SERVICES ORGANIZATION CHART



Subsystem (RTIS), an interactive online system which works with a number of batch programs that manipulate the data on an overnight basis.

Beyond the daily operations of data entry, update, and quality review, the Division establishes new databases and changes the current ones. Each of the branches within the Division maintains a number of auxiliary files to support the primary database and a number of special processes which are described below. The three branches of the Database Management Division are: the Bibliographic Database Branch (HDB), the Database Support Branch (HDS), and the Research and Engineering (R&E) Programs Database Branch (HDR). Figure 2-17 summarizes the organizational interactions of the Division.

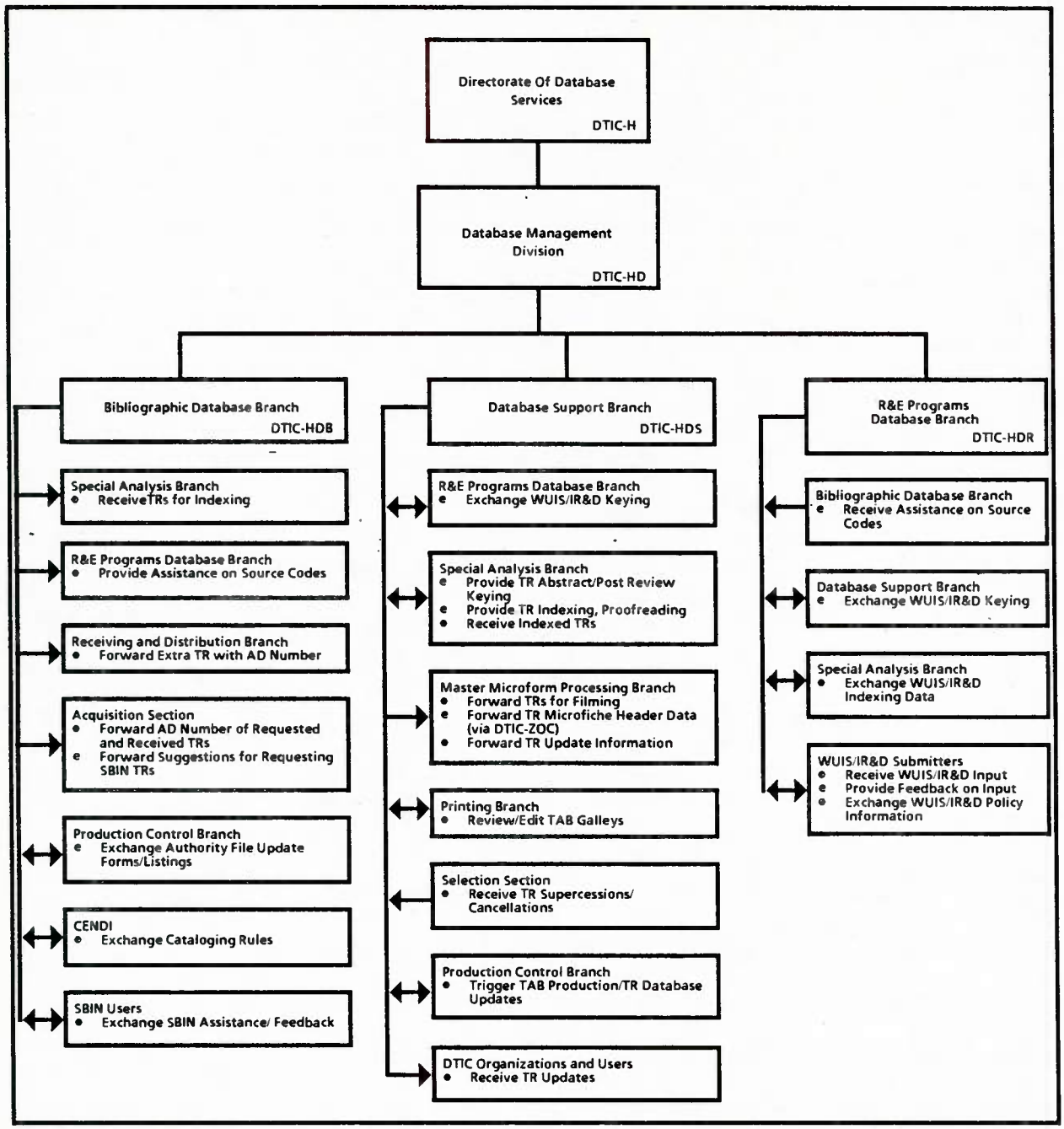
Future Plans. The Division has plans for a replacement input system.

Bibliographic Database Branch (DTIC-HDB)

The Bibliographic Database Branch establishes and enters TR descriptive cataloging data into the computer. The process is initiated by documents received from the Selection Section. Descriptive cataloging information is generally transcribed by the cataloger from the document directly into the computer using the RTIS. Catalogers receive printouts of the citations and proofread them for accuracy. Once a TR is input, the AQ file is searched to determine whether it is already there. If found, the Acquisition Section is notified of its AD number. Once the cataloging work is completed, the TRs are transmitted to the Special Analysis Branch.

In support of the TR and the management databases, the Branch also maintains four specialized data files: the Source Header file, the Source Hierarchy file, the Monitor Acronym Authority file, and Report Number file. These files are maintained by specialists within the Branch and serve as authority files for the databases.

FIGURE 2-17. DIRECTORATE OF DATABASE SERVICES – DATABASE MANAGEMENT DIVISION INTERACTIONS



The Bibliographic Database Branch also performs special functions, including supervising the Shared Bibliographic Input Network (SBIN) program, maintaining the DTIC cataloging guidelines, and working with the CENDI on matters relating to input and maintenance of citation data.

Tools. The Bibliographic Database Branch catalogers use display terminals for online entry of the TR bibliographic data using the RTIS software. Listings to proofread the data are generated from screen prints and by batch programs overnight. New AD numbers are maintained by logs of adhesive labels.

The Bibliographic Database Branch maintains the Source Header, the Source Hierarchy, the Monitor Acronym Authority, and Report Number files. Each is maintained through files controlled by batch programs that are updated by listings and keypunch cards. A duplication of the Source Header file is also maintained in a 3x5 card file. The Report Number file is a manual file maintained on 3x5 cards.

Organizational Interactions. The Bibliographic Database Branch forwards cataloged TRs to the Special Analysis Branch. It provides the R&E Programs Database Branch and external users with source codes.

TRs to be cataloged are received from the Selection Section. A second copy (or both if it is a duplicate) of each TR received is sent to the mail room after being assigned an AD number. The Acquisition Section is notified if the Branch finds a TR in the AQ file.

The Production Control Branch keypunches authority file update cards and provides listings of authority files and TR cataloging data.

The Bibliographic Database Branch works with users and CENDI members on guidelines for standardizing bibliographic data.

Future Plans. The Bibliographic Database Branch is studying the authority file systems and is developing a functional description for an online file structure. Specialists within the Branch are also responsible for the TAB replacement project.

Database Support Branch (DTIC-HDS)

The Database Support Branch is primarily composed of clerical personnel who perform three basic functions: data entry, proofreading and correction, and file maintenance. They perform initial data entry for WUIS and IR&D data that have been submitted to the R&E Programs Database Branch in hard copy form. The initial entry is either corrected by the R&E Programs Database Branch or returned to

the Database Support Branch. The Database Support Branch enters abstracts and subject terminology marked on listings by the Special Analysis Branch.

Branch personnel proofread subject oriented data, review the overall TR, and make necessary corrections as the last phase of TR input processing. The Database Support Branch releases a TAB group of citations for further processing by the Directorate of Telecommunications and ADP Systems and releases the corresponding documents and microfiche header tape to the Directorate of Document Services for microfilming. Proofreading functions include reviewing the galleys of each TAB announcement and checking SBIN and IAC citations entered by remote users. In both of these cases, the Database Support Branch marks the corrections but the Lithographic Section performs the actual corrections.

File maintenance functions include receiving forms or letters from any source noting an error in, or modification to, a citation in the TR database. A second form of file maintenance is making changes in the security level and limitation status of a TR, usually a downgrading or limitation change. For both types of maintenance, the document is extracted from the database, modified, and reentered into the database by using the RTIS software.

Tools. All functions (except reviewing TAB galley listings) performed by the Database Support Branch make use of the RTIS and associated batch software. In utilizing RTIS, the Branch makes use of CRT terminals. All proofreading is done from computer listings that are in most cases generated overnight and delivered the next morning.

Organizational Interactions. The Database Support Branch receives hard copy data from the R&E Programs Database and Special Analysis Branches to enter and produce listings. These listings are given to the R&E Programs Database and Special Analysis Branches to verify the entries. The Branch also receives corrections from the Bibliographic Database Branch. Within the Directorate of Document Services, the Branch works with the Master Microform Processing and Printing Branches. The Database Support Branch provides the Master Microform Processing Branch TRs to be microfilmed and header data (via a tape from the Production Control Branch). The Printing Branch supplies the Database Support Branch with galley listings of the TAB to be proofed then corrects any errors found. The ADP Directorate receives notice from the Database Support Branch to process the TR header tape, the DROLS TR database update, the TAB, and other output products. In turn the ADP

Directorate provides to the Database Support Branch listings and notification that TR Current File can be cleared after a DROLS update.

Research and Engineering Programs Database Branch (DTIC-HDR)

The R&E Programs Database Branch is responsible for the maintenance of three databases – WUIS, IR&D, and PEDS. They are responsible for most aspects of the management databases including: acquisitions, coordination with external submitters of data, data entry and update, and database policy development.

The PEDS database is scheduled for implementation in February 1987. It will contain DoD-component-level descriptions of R&E programs. The Program Element Descriptions are a part of the DoD budget submission process. The availability of this information will be particularly helpful to contractors trying to anticipate future DoD requirements.

The WUIS and IR&D databases contain descriptions of current (or past) R&D projects. The WUIS database tracks projects being performed by Government organizations or by contractors working on specific DoD contracts. The IR&D database tracks projects that non-Government organizations are performing outside of specific Government contract.

Each year organizations submit to DTIC, by DoD requirement, information that describes new projects, the revised status of ongoing projects, and the termination or completion of others. Using a variety of techniques, the R&E Programs Database Branch inputs these data into the Research and Engineering General Input System (REGIS). On a weekly basis, new WUIS transactions are then updated into a DROLS database; IR&D transactions are usually updated on a biweekly basis.

The R&E Programs Database Branch consists primarily of personnel who receive and process the data submitted to DTIC from external organizations. Other staff members coordinate with each of the Military Services on the submission of data and develop new policy and processing techniques for the Branch.

Tools. The R&E Programs Branch has one CRT terminal for editing data entered by external organizations or by the Database Support Branch. This entry is performed using the RTIS and REGIS software systems. Outputs of these systems include a variety of listings generated overnight. The Branch also has access to three IBM microcomputers that are used primarily for word processing. The Branch is planning to implement the PEDS database on the UNIDAS system. The Branch has an Optical Character Recognition (OCR) reader for experimentation with WUIS input.

Organizational Interactions. The R&E Programs Branch provides hard copy of the inputs of WUIS and IR&D data to the Database Support Branch. The Branch receives assistance from the Bibliographic Database Branch in establishing Source Header codes for the input.

The R&E Programs Branch works with the Directorate of Telecommunications and ADP Systems to load incoming tapes of WUIS and IR&D data, to obtain listings of transactions and status, and to update the REGIS and DROLS databases.

The R&E Programs Branch receives the listings from sources in tape, hard copy, or remote RTIS input formats. Currently, it only corrects hard copy data keyed by DTIC. Corrections to other data are returned to the source for anything but minor errors. The Branch service coordinators also work with sources to improve all aspects of the program. The Branch interfaces with the external organizations regarding the accuracy, timeliness, and extent of their submissions.

Future Plans. The primary future event is the implementation of the PEDS database. It is beginning to correct data submitted by external sources rather than returning listings to the source. The Branch intends to take on a greater level of editing for externally entered data.

The Branch is also coordinating with the Services to revise the contents and scope of the WUIS database.

Analysis Division (DTIC-HA)

The Analysis Division is responsible for the subject content of the databases. The Special Analysis Branch determines subject-related input to the databases and the Retrieval Analysis Branch retrieves citations from the databases. Those retrievals are generally, but not necessarily, based on subject-oriented searches.

The primary component of subject access is the DRIT, a fully hierarchical thesaurus of DoD and technologically oriented terms. DRIT terms are applied to citations at input time and as part of the DROLS inverted file structure, they serve as the primary subject access. Other subject data includes uncontrolled terms – any

non-DRIT word or phrase that the subject analysts feel describes the document. The title of the document and the uncontrolled terms are also inverted to provide additional subject access. The fields and groups represent broad categories of subjects, and the document abstract also provides subject information, but neither of these is contained within the inverted files. Figure 2-18 summarizes the organizational interactions.

Special Analysis Branch (DTIC-HAS)

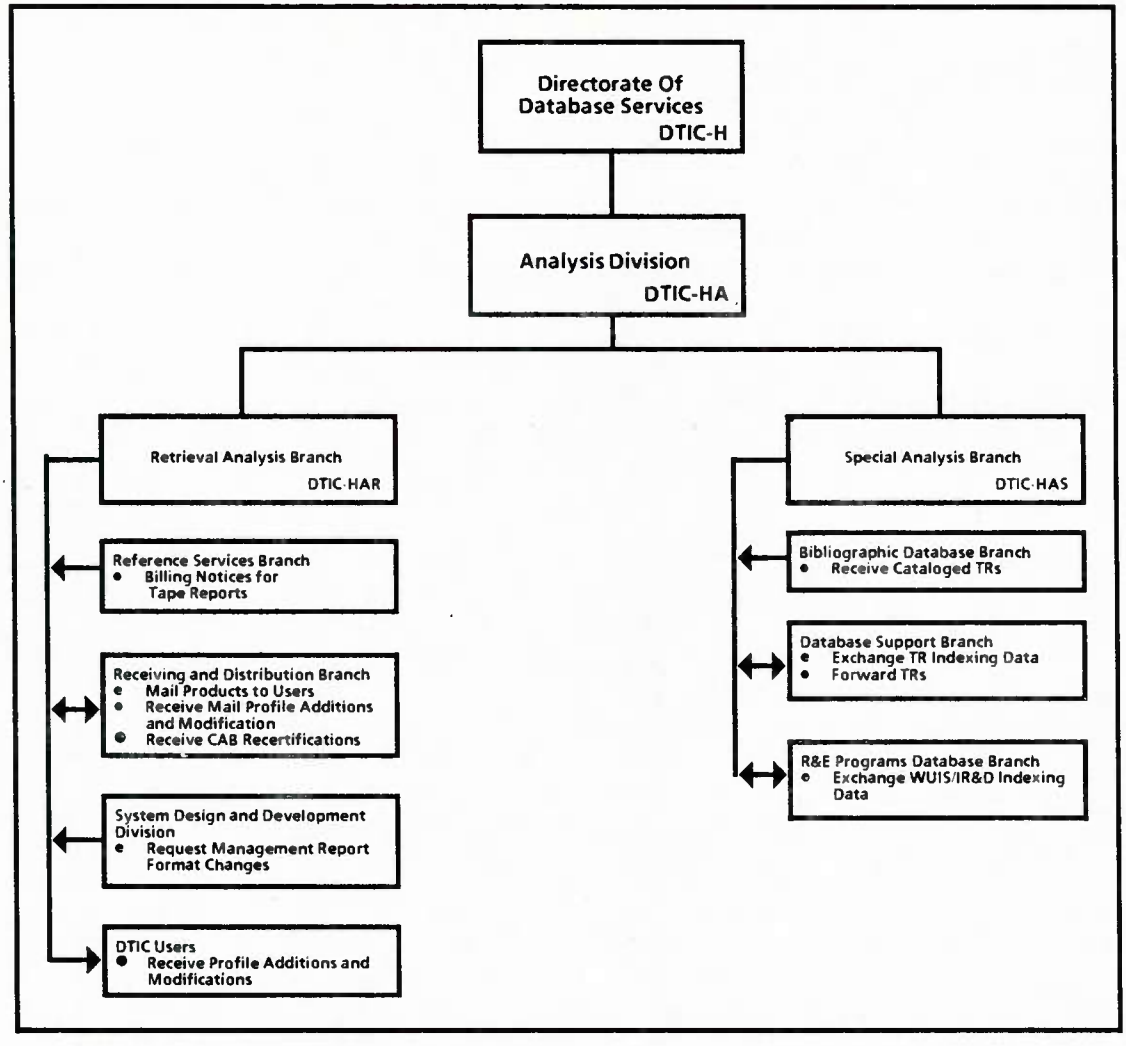
The Special Analysis Branch assigns DRIT terms, uncontrolled terms, and field and groups data to TR citations. WUIS and IR&D subject data should also be applied by the Special Analysis Branch, but because of staff shortages, that function is performed only on a limited basis.

Tools. The Special Analysis Branch relies on a series of sophisticated computer programs, collectively called MAI. The MAI programs read a document abstract and title, and convert them into a series of subject-oriented words and phrases.

Organizational Interactions. The Special Analysis Branch receives TRs from the Bibliographic Database Branch. After marking the abstract, the Special Analysis Branch forwards the TRs to the Database Support Branch. The Special Analysis Branch receives back classified TRs after data entry. The Branch then again forwards classified TRs and all post review listings to the Database Support Branch.

From the Production Control Branch, it receives MAI output listings of TR, WUIS, and IR&D citations. Post reviewed management data are forwarded to the R&E Programs Branch.

FIGURE 2-18. DIRECTORATE OF DATABASE SERVICES – ANALYSIS DIVISION INTERACTIONS



Retrieval Analysis Branch (DTIC-HAR)

The Retrieval Analysis Branch retrieves data from the DTIC database through a variety of products and services, including:

- Demand Bibliographies and Reports: These are responses to telephone, letter, or visit requests by users to produce bibliographies from the TR database or reports from the management databases based on the user's criteria. For example, a user might wish to see all TR citations relating to lasers for guidance control. Demand report and bibliography searches are run one time in response to the particular user's request and are tailored specifically for it.

- CABs: CAB searches are essentially the same as those for demand bibliographies except that the search strategy is stored in the computer and run every 2 weeks against all new reports being added to the TR database – about 1,200 documents. Any new document that meets the search criteria (profile) is printed on the bibliography.

- Recurring Reports: These reports are equivalent to CABs except that the user's profile is processed against new WUIS or IR&D data rather than TR data. Recurring reports are run monthly, semiannually, or annually according to the user's preference.

- ADD: ADD is similar to CAB except that the product which results from applying the user profile against the new TRs is a microfiche of the desired TRs. For this product, the Retrieval Analysis Branch is responsible for maintaining the user profile while the Microfiche Maintenance and Distribution Branch is responsible for the generation and distribution of the microfiche.

- Query Formulation Assistance: Users with terminals, telephone and request assistance in selecting terminology and formatting their queries.

- SBIR Searches: In October of each year, the DoD announces the SBIR topics for that year. DTIC produces bibliographies on each topic (in 1985 approximately 1,500 bibliographies were produced). The bibliographies are run in August and September. The Retrieval Analysis Branch is responsible for providing one copy to the DTIC SBIR Team.

- National Science Foundation (NSF) Report: This is a yearly report of Federal support to universities, colleges, and selected non-profit institutions. DTIC is responsible for supplying the DoD contracts to these organizations. The information is gathered from a number of sources and supplied to NSF in the spring of each year.

The Retrieval Analysis Branch has no formal breakdown of the organization below the branch level, but several team leaders are responsible for one or more of

the products. These teams are different from many of the other DTIC teams in that the staff is not divided amongst them, but generally works on all of them.

Tools. The critical tools for the operation of the Retrieval Analysis Branch are the DROLS databases and the nine terminals and several PCs used to access them. An inherent part of this work is knowledge of the DRIT which is the primary key to subject access to the databases. The DAL is used to verify proper user registration and classification levels.

Also available are the Air Technical Index/Technical Information Pilot (ATI/TIP) catalog cards, which are the only access points to older documents, which were entered into DTIC's collection prior to the advent of a 1950's computer database. There are approximately 200,000 TRs represented in this collection.

In March 1986 the Retrieval Branch acquired IBM PCs. However, at this time, their usage is mostly as additional retrieval terminals.

Organizational Interactions. The Retrieval Analysis Branch does not significantly interact with any of the other branches of the Directorate of Database Services. Completed bibliographies are sent to the Receiving and Distribution Branch for mailing. User requests for information are frequently routed to or from the Reference Services Branch.

The Retrieval Analysis Branch gives approval to the Directorate of Telecommunications and ADP Systems for the CAB, Recurring Report, and ADD production runs based on the successful addition of new or revised profiles into the master file of profiles. It also receives from that Directorate printouts of test and production runs for demand and recurring bibliographies, along with a number of listings containing production statistics. It forwards to the Reference Services Branch information indicating which users are receiving demand bibliography or report tapes.

Future Plans. The Retrieval Analysis Branch participates in DGIS gateway training and experimentation. Exactly how the gateway will be used is not clear, but it could be used to provide bibliographies for databases other than DTIC's. This service is already provided on a limited basis to high-ranking Government and Military officials. Use of the PCs is intended to include development of the retrieval request tracking system, but no programming resources are currently available.

The Retrieval Analysis Branch is experimenting with developing query strategies on selected R&D topics of an important nature and distributing them over the telephone and perhaps by other means to users who can then run the queries on their own terminals.

3. SUPPORT SYSTEMS DESCRIPTIONS

INTRODUCTION

Chapter 2 presented the organizational elements of DTIC and described their structure, their organizational interfaces, and briefly, the work they perform. This chapter describes in more detail the work they perform and how they perform that work. All of DTIC's activities are grouped into one of four categories:

- Scientific and Technical Information (STI) Support Systems: This, the largest category, includes all the primary activities of collecting and disseminating STI. It includes such work as input processing and document ordering and focuses on the activities of the Directorates of Document Services and Database Services.

- User Support Systems: This category describes work relating to users and includes registration, training, billing, and communicating. It focuses on the activities of the offices.

- Automated Data Processing (ADP) Support Systems: This category involves the operations and environment of the Directorate of Telecommunications and ADP Systems both in its support of other DTIC organizations and its internal operations.

- Staff Function Support Systems: This category describes those systems that support DTIC's organization in the performance of its primary activities. It focuses on the activities of the offices.

Two of the four categories are composed of two or more process groups. In turn, each process group is composed of two or more related or similar processes. A process is a related group of activities (functions) which accomplish an organizational goal (e.g., produce management reports or register users).

Each process description provides a narrative of the work being performed, generally in the sequential order of the steps performed. It identifies the organization performing the work and where the work crosses organizational boundaries. Each process is accompanied by a chart that summarizes the functions within the process. For processes that cross numerous organizational boundaries, a figure

illustrates the participating organizations. Several of the more complex processes are further described by a flowchart included in Appendix C. Appendix D provides a summary of the automation status of the processes.

The descriptions emphasize how the DTIC work is performed and organized and are not intended as operating procedures. They describe the primary or normal flow of the work, and while they describe major exceptions, they do not cover the many adjustments DTIC staff members must make to complete the work when unusual events occur. The majority of the processes make use of DTIC's computer systems, and the descriptions discuss how the data are submitted to these systems and what outputs they produce. However, they do not incorporate and identify each of the literally hundreds of listings generated by the computers and distributed each day.

The information in this chapter is based on interviews with more than 100 DTIC employees and reference material provided by DTIC. A list of the reference material used is provided in Appendix A and the personnel interviewed in Appendix B. DTIC, like any organization, is continually evolving and procedures and processes are constantly changing. The processes described here present DTIC's workflows as of 1 June 1986. Clear plans for change are identified in Chapter 2.

SCIENTIFIC AND TECHNICAL INFORMATION SUPPORT SYSTEMS PROCESS GROUPS

The STI Support System consists of seven process groups, each of which is broken down into two or more processes. Through these processes, the bulk of DTIC's products and services are provided to its users. The seven process groups center on the activities of the Directorates of Document Services and Database Services and on operational support from the Directorate of Telecommunications and ADP Systems. The seven process groups are: (1) Acquire STI Data, (2) Store TRs, (3) Store Management Data, (4) Make STI Data Available, (5) Disseminate STI Products, (6) Maintain STI Tools and Aids, and (7) Provide Specialized STI Support Systems. Figure 3-1 shows the relationships of these process groups and each is described in detail in the following paragraphs.

Acquire Scientific And Technical Information Data Process Group

One of DTIC's primary missions is to disseminate information on DoD's Research, Development, Test, and Evaluation (RDT&E) projects. That information helps prevent redundant work and obtain the maximum benefit of related RDT&E. Many DoD operations require researchers to search DTIC databases before beginning a project.

DTIC's databases can only contribute to this effort to the extent that RDT&E related information is entered into them. To improve the extent of its coverage, DTIC maintains acquisitions activities for its databases. TR acquisitions are the responsibility of the Acquisition Section of the Document Services Directorate, and management data acquisitions are the responsibility of the Research and Engineering (R&E) Programs Database Branch of the Database Services Directorate. Their acquisition operations are summarized in Figure 3-2.

FIGURE 3-1. STI SUPPORT SYSTEMS PROCESS GROUPS

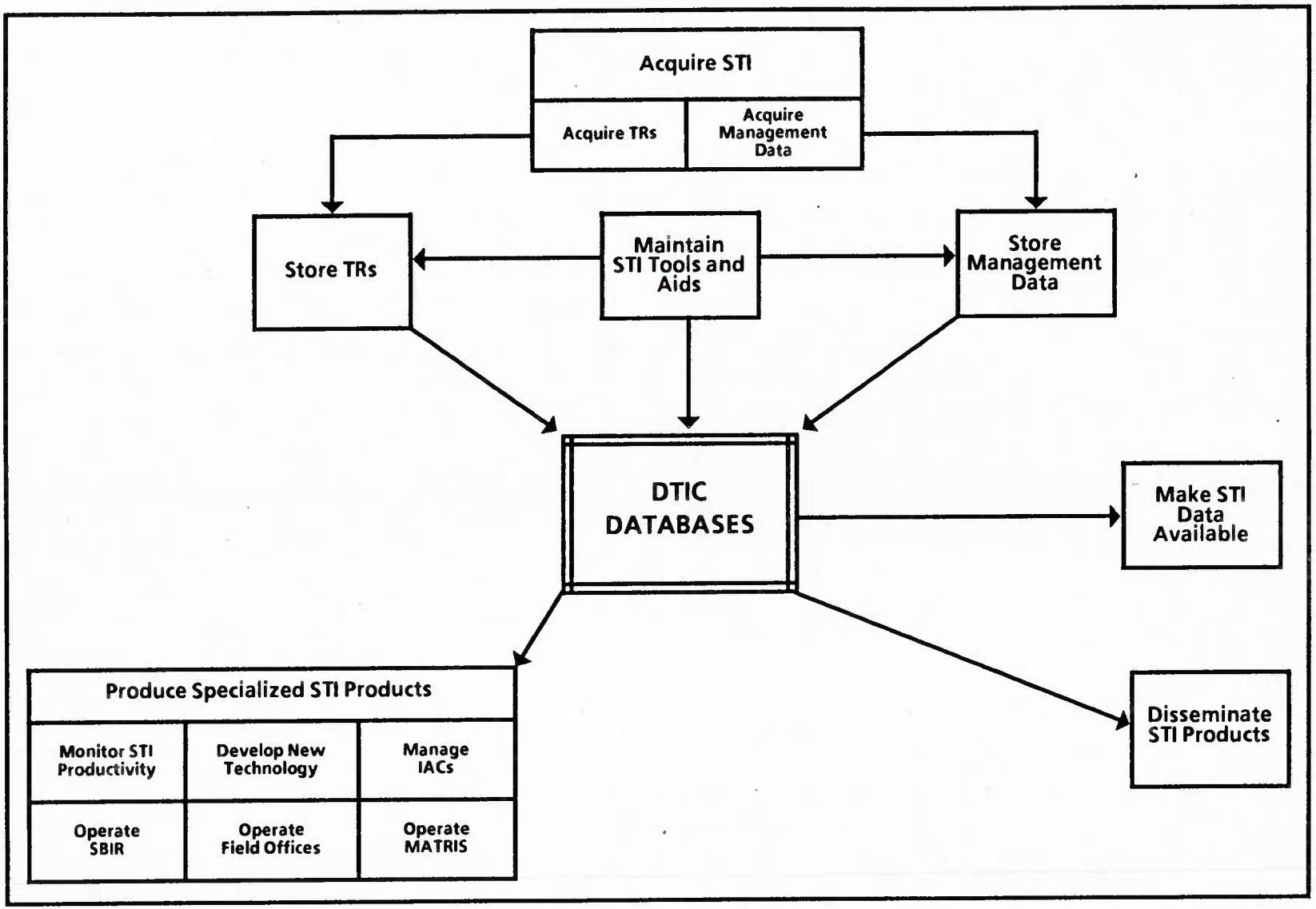
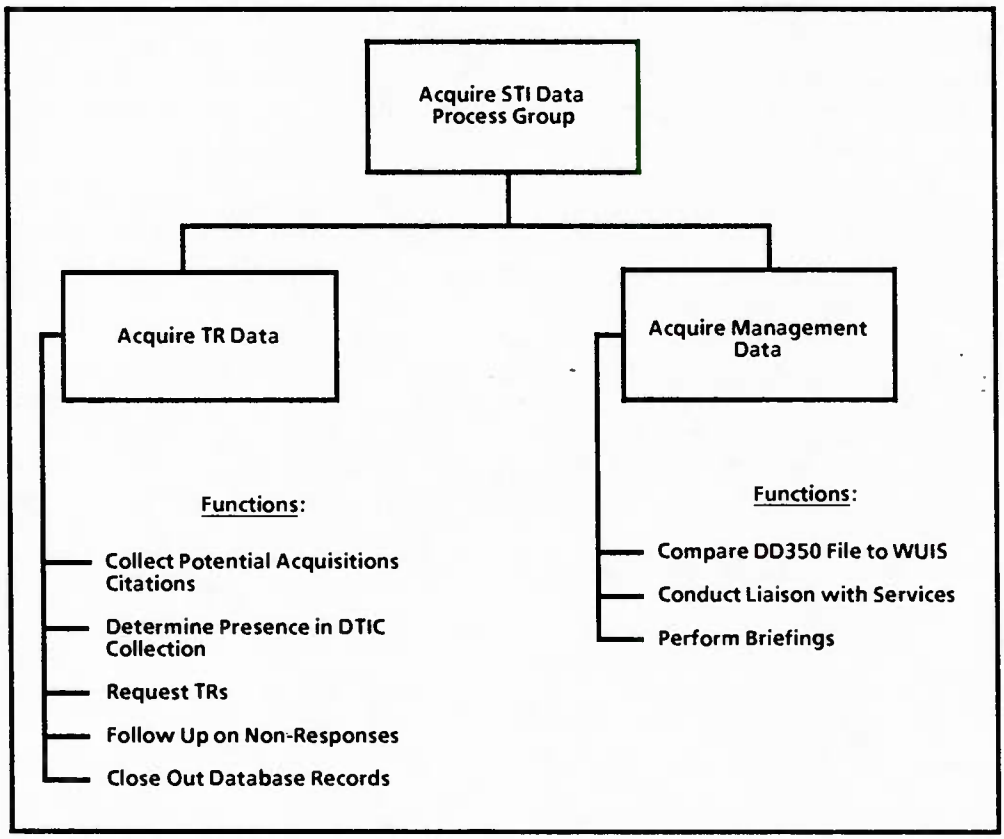


FIGURE 3-2. ACQUIRE STI DATA PROCESS GROUP FUNCTIONS



Acquire Technical Reports (TRs)

The Acquisition Section is responsible for obtaining documents for the TR database. Although information on potential acquisitions comes from a variety of sources, the four methods used most are:

- In-house bibliographies of missing TR numbers. A Defense RDT&E On Line System (DROLS) search is conducted with the monitor series and the monitor report number. Missing report numbers are searched on the acquisition (AQ) database and any report number not identified in DROLS or the AQ database is ordered.

- Bibliographies. Bibliographies from other sources are searched and reports that meet the DoD criteria for acquisition are selected. A search of the DROLS and the AQ database is conducted to confirm the selected report is not at DTIC.

- Requests from DTIC users. DTIC Form 1 (Document Request) is reviewed for adequacy and relevance of the information. A search of DROLS and AQ database is conducted to verify that the report is not in the DTIC collection and has not been previously ordered.

- Comparison of the TR database with the Work Unit Information System (WUIS) databases. The WUIS is compared with the TR for matching contract numbers. Items in the WUIS database for which there is no corresponding item in the TR file are identified and the project monitor is requested to forward project documents for input into the DTIC collection.

Before a decision is made to obtain a document, DROLS is searched to determine whether the document is in the DTIC collection. The AQ database is searched to determine whether previous attempts have been made to acquire the document. The AQ database (approximately 11,000 records) is maintained on the Sperry 1100/61 computer, under the BASIS database management system (DBMS). The AQ database keeps basic bibliographic information about each document (author, contract and title, etc.) and a history of efforts to acquire it including the source of the document, the date requested, and the user code. If the request is older than 1982 (the year AQ was implemented), previous acquisition attempts are also checked in the card catalog.

If the document is not identified, a "Request for Scientific and Technical Report" form letter (FL88) is typed and mailed to the report monitor and an acknowledgment letter is sent to the requester. The information is entered into the AQ database and copies of the letters are filed. One of four events should then occur:

- The TR arrives at DTIC and starts through the pipeline. When descriptive cataloging is complete, a clerk in the Bibliographic Database Branch searches the AQ database and, if the document is on order, notifies the Acquisition Section of the AD number. The Acquisition Section then deletes the item from the AQ database, updates the hard copy file, and notifies the Reference Section. Further, if the initial notification from the user came on a DTIC Form 1, then the DTIC Form is returned to the Reference Section as a document order. If it came as a letter, the Reference Section will first contact the requester to reconfirm the order.

- A denial note is received from the contract monitor. In this case, the Acquisition Section updates the AQ database and hard copy files and notifies the Reference Section.

- No notice is received. After 90 days, the Acquisition Section sends a follow-up letter (tracer copy) on the basis of information from the AQ database. The AQ database and hard copy files are updated with this information. After another 90 days, a "no response" is treated as a denial.

- The contract monitor notifies the Acquisition Section that the document is not yet available. The Acquisition Section notes this information in the files and follows up about the time the contract monitor said the document would be available. Additionally, the Reference Section is notified of the revised availability date.

Each of these events should (within 180 days) result in deleting the AQ record for an acquired document with the Reference Services Branch being notified of the AD number or closing the record for a denial (except for documents not yet available). The procedure described is based on the assumption that the acquisition effort was initiated by a user request. If it had been initiated by other reviews, the process would be the same except there would be no need to notify the Reference Section of the status.

Acquire Management Data

Responsibility for acquisition of management data lies with the R&E Programs Database Branch. Its activities currently center on the Independent Research and

Development (IR&D) and WUIS databases. IR&D submissions for independent research for DoD associated organizations (contractors, academia, etc.) have been satisfactory. WUIS submissions primarily come from the Military Services. Until recently, the Army and the Air Force have collected their work units at a central point and then submitted them to DTIC on tape. However, the Air Force has eliminated its centralized system and Air Force submissions now come to DTIC from individual components (as do Navy submissions).

The R&E Programs Database Branch has recently taken a number of steps to improve work unit submissions. It has assigned staff members to act as liaison with each Service and to improve the timeliness, quality, and completeness of submissions. This liaison includes presenting briefings on the WUIS. A second step has been to compare the DD Form 350 file of DoD contracts to the WUIS database to identify missing contracts and attempt to obtain them. An additional step under consideration is to request that work unit submissions be tied to contracting procedures.

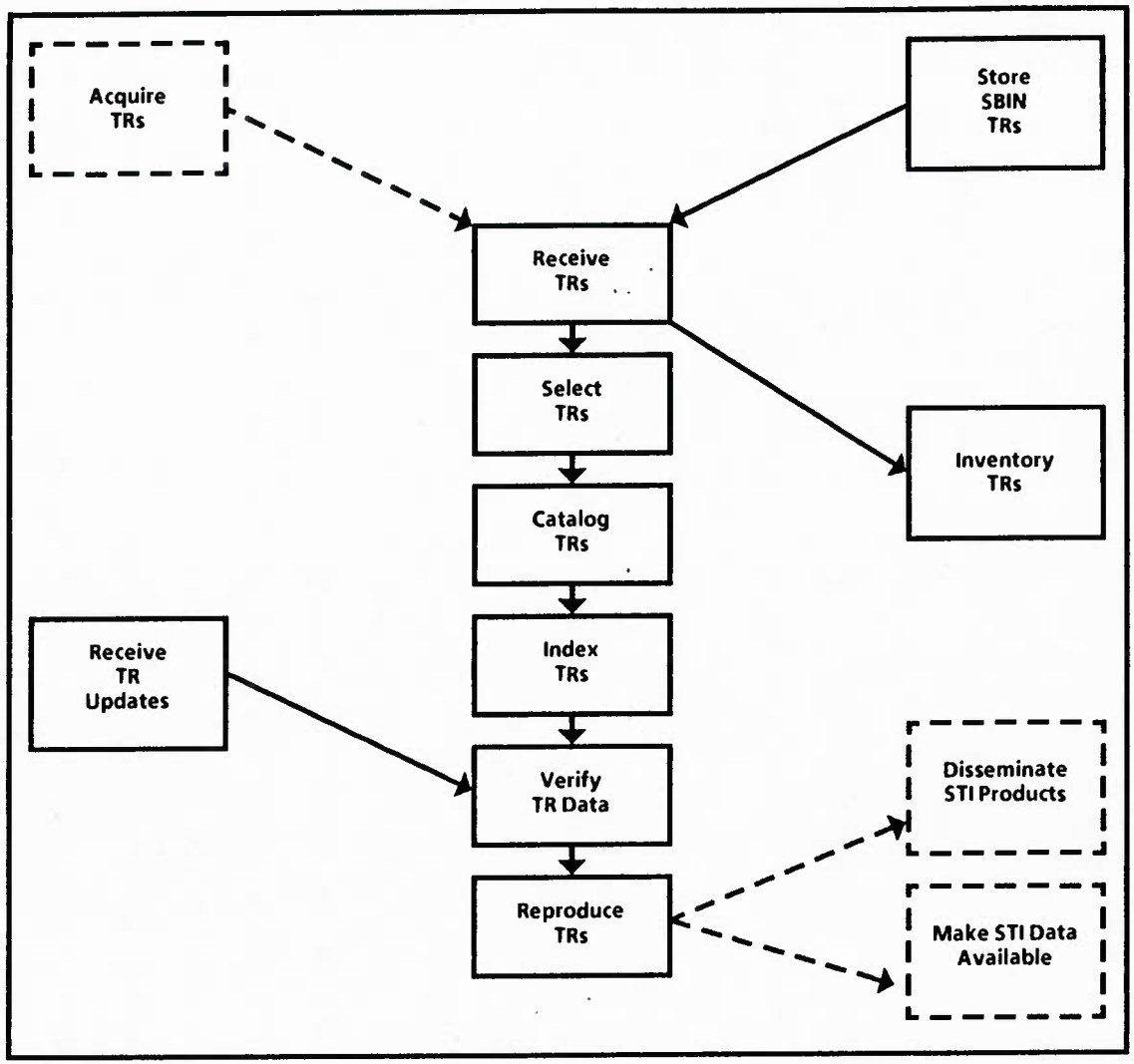
Store Technical Reports Process Group

Disseminating information on DoD-funded TRs is DTIC's primary mission. TR data are stored in three forms: (1) each TR is reproduced as microfiche to be the DTIC permanent record, (2) hard copies are supplied to users as quantities last, and (3) basic information on the TR is stored in DTIC's computers to produce the variety of information products that makes the DoD community aware that DTIC has the TR.

Nine processes convert a TR into its final stored forms (see Figure 3-3). At DTIC, these are called the TR input pipeline or simply "the pipeline."

The operation of the pipeline is organized around two concepts. The first encompasses the functions necessary to store a single TR, and the second is the grouping of approximately 1,200 TRs into what is called a Technical Abstract

FIGURE 3-3. STORE TRs PROCESS GROUP



NOTE: Dotted box indicates previous or next process group or process.

Bulletin (TAB) cycle. The TAB cycle results in the generation of various DTIC products such as the TAB, Automatic Document Distribution (ADD), Automatic Magnetic Tape Distribution (AMTD), and Current Awareness Bibliography (CAB). These products announce DTIC's new TRs and are produced every 2 weeks.

TRs come to the DTIC mail room where they are separated from other DTIC mail and stamped with a date and sequential number. They are then passed to the selection process where they are reviewed for physical quality and acceptability to the DTIC collection. Next, they go to the cataloging process which enters their basic bibliographic information into DTIC's computers. The indexing process then enters subject-related data, and the verification process reviews the quality of the data and performs overall control functions on the TAB cycle group. The process group is completed by producing microfiche and storing the hard copy. Figure 3-4 summarizes the functions of each of the processes that are described in the following sections, and Figure 3-5 shows the participating organizations and their interrelationships.

Receive Technical Reports

The Receiving and Distribution Branch of the Directorate of Document Services receives classified and unclassified TRs. They accept delivery of documents, log classified documents and report discrepancies, date-stamp documents, forward documents to be selected, hold extra documents, and put AD numbers on extra TRs.

Classified TRs are delivered to the DTIC mail room by USPS by registered mail. A Postal Service Registry Form 3883 is delivered to DTIC along with a sealed bag of TRs. Mail room clerks check the registry numbers of the classified reports and report discrepancies to DTIC's Command Security Officer and USPS. Other control logs include DLA Form 27 (Classified Document Register and Receipt), and a log book used to control other sensitive document types. Classified reports are date-stamped and forwarded to the Selection Section, and any extra copies are kept in the locked cage in the mail room.

FIGURE 3-4. STORE TRs PROCESS GROUP FUNCTIONS

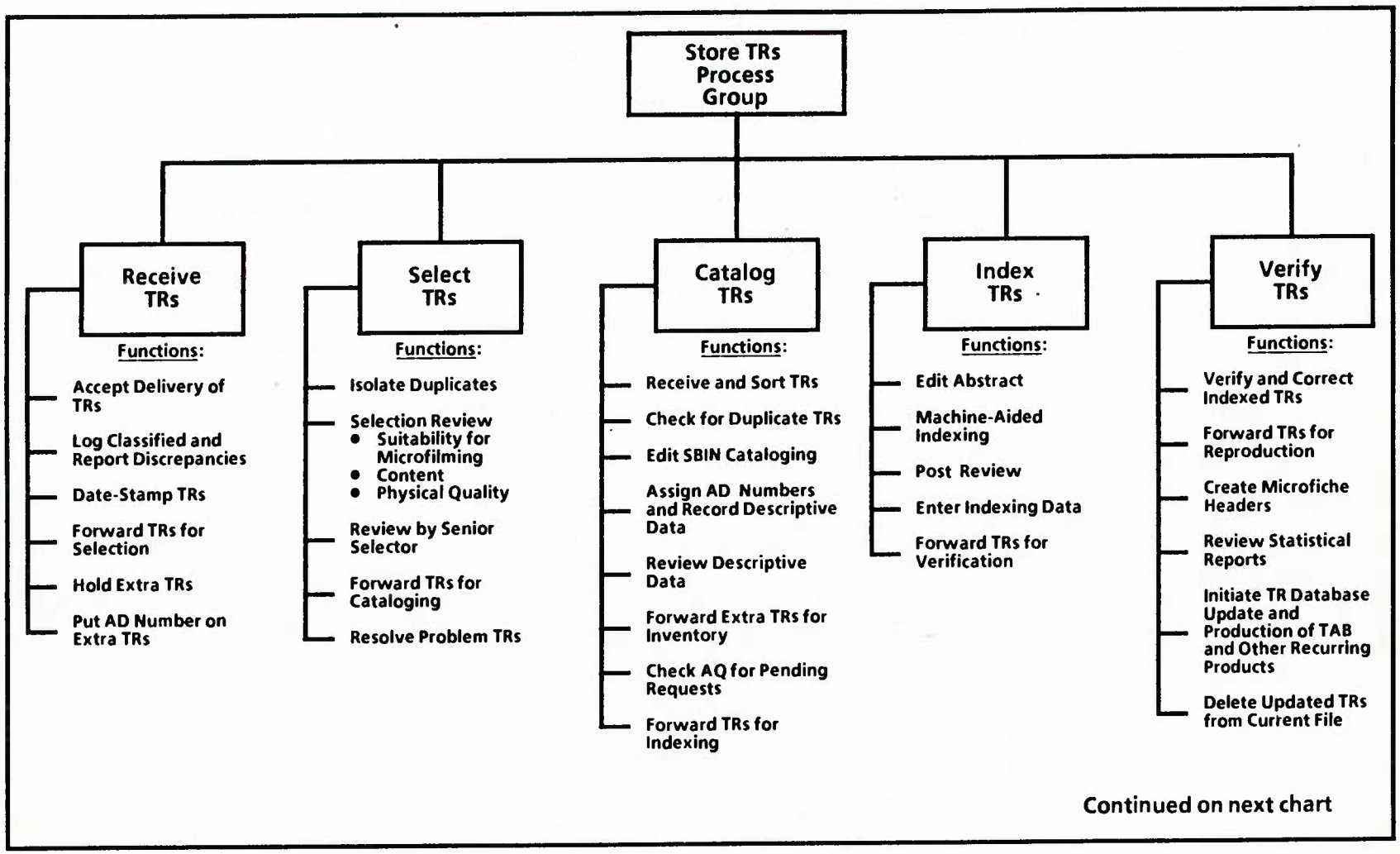


FIGURE 3-4. STORE TRs PROCESS GROUP FUNCTIONS (Continued)

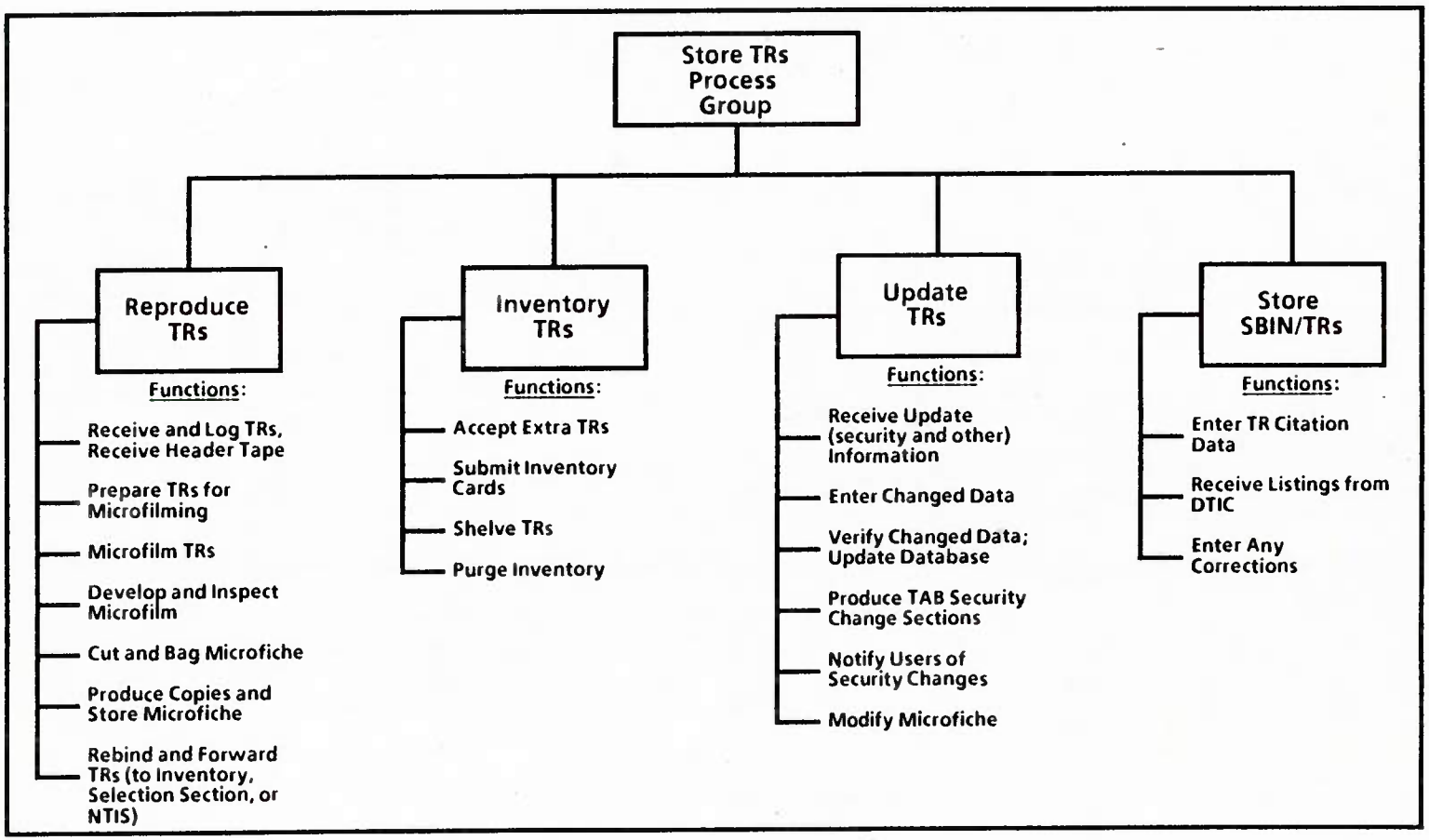
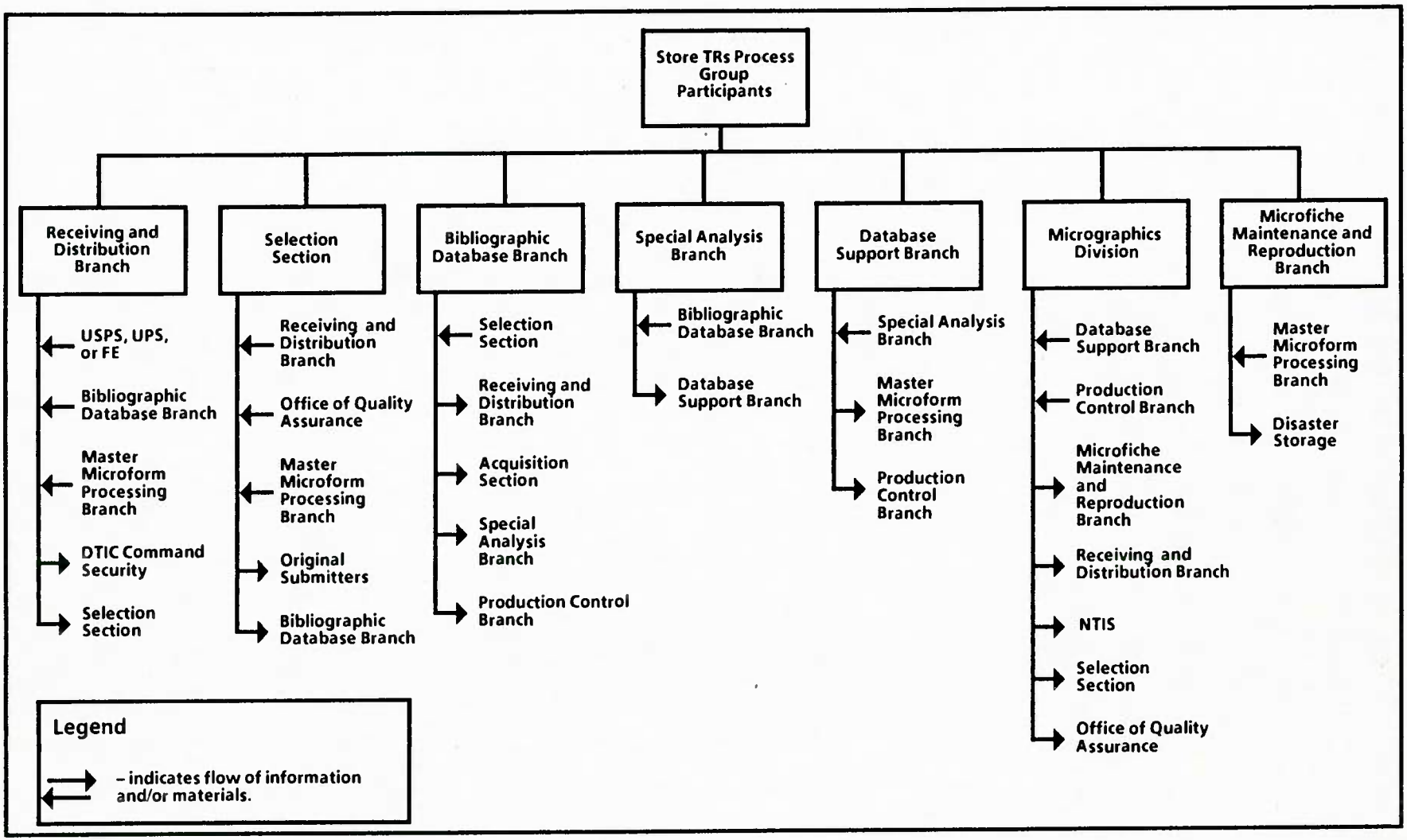


FIGURE 3-5. STORE TRs PROCESS GROUP PARTICIPANTS



Unclassified TRs are delivered to the DTIC mail room by USPS, Federal Express (FE), United Parcel Service (UPS), and other courier organizations. These reports are date-stamped and forwarded to the Selection Section. Extra copies of unclassified reports are kept in the mail room holding area where they are held until one of the forwarded copies is returned from the Bibliographic Database Branch. The AD number assigned to this copy is stamped or hand copied onto the others, and they are forwarded to inventory.

Select Technical Reports

The Selection Section reviews newly received documents and evaluates their suitability for inclusion in the TR database. Documents received from the mail room are transferred from the mail cart onto holding shelves to await selection. During this transfer, if a document has an AD number on the cover or seems especially old, it is set aside to isolate likely duplicates or TRs DTIC has requested from external sources for refilming because of deteriorating microfilm at DTIC. Any accompanying correspondence is reviewed, and the document may be duplicate-checked on a portable terminal. Duplicates are forwarded to the Receiving and Distribution Branch to inventory, and TRs resubmitted at DTIC's request are sent to the Office of Quality Assurance to be refilmed.

The Office of Quality Assurance selects TRs and examines their suitability for microfilming. One of three grades is marked on the cover of the document. If the TR is acceptable or marginal, it is allowed to continue through the pipeline. If it is clearly unacceptable, it is routed to the Selection Section problem-resolution specialist to obtain a better copy.

TRs are taken from the holding shelves generally on a first-in, first-out basis. The selectors perform a review for technical content. If a TR is unacceptable, it is returned to the source. Less than 2 percent of the documents received are rejected based on technical content.

In the third review selectors examine every page for defects in physical quality, such as unreadable copy and missing pages, and check distribution statements for correctness. Distribution statements and other information used throughout the cataloging process are included in the "Report Documentation Page," (DD Form 1473). These data are generally prepared by the report author(s) and should accompany every TR sent to DTIC.

The selector completes the review by attaching any necessary instructions for further handling to each TR. Among those instructions may be directions to return borrowed copies of TRs or to film compendium articles as separate documents. The acceptability of TRs is briefly reviewed by the senior selector, and if accepted, the TRs are placed on a table for forwarding to the Bibliographic Database Branch. As part of their work, selectors maintain logs of their production and forward those logs to management each day.

As a result of the physical review, approximately 15 percent of the incoming TRs are found to have problems that prevent immediate cataloging. Those TRs are routed to another staff member in the Selection Section who resolves the problems by telephoning or writing the source. Up to 45 days is allowed for resolution of problems and about 95 percent of the problems are satisfactorily resolved and the TRs are returned to the pipeline. A TR whose problems are not resolved in that time is returned to the source.

Catalog Technical Reports

The Bibliographic Database Branch creates the computer citation containing the descriptive bibliographic data from the document. After the TR has been initially processed by the Selection Section, a clerk in the Bibliographic Database Branch counts the documents and records information about TR categories (e.g., classified, unannounced). The count is recorded on an "Incoming/Outgoing Documents" Form (DTIC Form 444) and verified with the Selection Section. The TRs are

then placed in envelopes marked to denote their classification level and TAB cycle. The clerk then places the TRs in another holding area where a senior cataloger sorts them into separate stacks of approximately equal cataloging work.

As catalogers become available, they select stacks to process. They first check for duplicates by searching the TR database to determine whether it is already in the collection. They also search the "Current File," which contains all references to TRs in the pipeline (but not yet in the master TR database). The Current File is updated twice a day for duplicate-checking purposes and, near the end of a TAB cycle, may contain as many as 2,000 citations. It is purged of TRs relating to a given TAB every 2 weeks with the update of the master TR database.

The duplicate-check of the TR database and the current file should result in one of three conditions: finding no citation, finding a matching citation submitted by a SBIN site, or finding a duplicate. If the TR is a duplicate, it is marked with its AD number and sent to inventory thus completing the process.

If the TR being cataloged is an SBIN document, it is routed to a SBIN specialist in the Bibliographic Database Branch for review. That specialist matches the TR to a previously generated report of SBIN inputs, makes corrections or modifications to conform with DTIC cataloging standards, and assigns a new AD number. (Based on the SBIN report, the specialist periodically recommends TRs that have not been received to the Acquisition Section for ordering. The Acquisition Section is also given the report of SBIN inputs.) The TR is then forwarded to the Special Analysis Branch, where the subject indexing is reviewed and augmented, and the information is entered using the Remote Terminal Input System (RTIS). The Selection Section is notified of the change in AD number so that a supersession transaction can be initiated.

Most commonly, a TR is neither a duplicate nor a SBIN input. It is therefore processed through the rest of the cataloging and input steps. The first step is to

assign an AD number. The Production Control Branch provides listings containing triplicates of adhesive-backed labels with pre-printed AD numbers on them. The catalogers take a triplicate and places one on a copy to be returned to the Receiving and Distribution Branch for storage, places the second on the TR to be cataloged, and the third on the document envelope. Cataloging consists of identifying and formatting the information to be transferred from the TR into the database. Items such as title, personal author, corporate author, security classification, and page count are extracted from the TR and entered into the bibliographic citation through RTIS. Subject-oriented data are excluded from this processing step.

The rules that govern descriptive cataloging are documented in the "DTIC Cataloging Guidelines," which is 90 pages long and defines the entry of some 30 fields. Many of the data formats are complex. For example, if the authors of a TR are Milton B. Smith and John D. Jones, their names are entered into RTIS as follows:

Milton B. /Smith;John D. /Jones

The Bibliographic Database Branch catalogers assign codes to represent the organization producing the TR (source headers) and the DoD releasing agency (monitor acronyms). Catalogers can refer to printouts or card files to obtain the appropriate code. (Occasionally, new codes need to be added, see Maintain Source Headers and Hierarchies.) The cataloger enters the data (using RTIS) from a completed DTIC Form 41 or from a small portion of data on the form, and the rest directly from the document. Keying data through RTIS requires use of a display terminal to enter a series of commands, field number tags, and actual data. RTIS provides no menus, prompts, or formatted screens. The user must know and type all commands (e.g., that @NI@ is the command to initiate a new document), all field tags (e.g., @10@ is the personal author field tag), and the data formats. An example of how a typical document citation would appear is shown in Figure 3-6.

FIGURE 3-6. SAMPLE CITATION INPUT VIA RTIS

@1@ADA156701

@1A@A

@2@p8/4

@6@Arguments against Alleged Proof of the NA-K Pump
in Studies of K + and NA + Distributions in Amphibian Eggs,

@10@Kirk L. /Gibson; Walter P. /Boggs

@11@1983

@12@13

@15@N00014-78-C-0125, $PHS-2-R01-CA46341-03

@20@u

@21@Pub. in Physiological Chemistry and Physics NMR, v18 p314-325 1984.

@23@*EGGS, *CATIONS, *SODIUM, *POTASSIUM, *AMPHIBIANS,
TRANSPORT PROPERTIES, AMPHIBIOUS OPERATIONS, BLOOD PLATELETS,
CELLS (BIOLOGY), DISTRIBUTION, EQUATIONS, ERYTHROCYTES,
FROGS, HUMANS, HYPOTHESES, LIFE(BIOLOGY), MUSCLES, NERVE
FIBERS, PARTICLES, PUMPS, SOLUTES, THEORY, MEMBRANES(BIOLOGY),
TRANSPORTS PROPERTIES, REPRINTS.

@24@uWith the aid of an ingenious technique called the reference phase method, White and his coworkers tested the alternative theories of solute distribution in living cells. Many interesting and significant findings led us to the belief that their claim of a proof for the Na pump theory was unwarranted. By taking into account other relevant data, one can argue that their data, in fact, support an alternative theory, association induction. Distribution patterns of K + , Na + and other solutes in all kinds of living cells, including frog muscle, human red cells, and amphibian eggs, as well as all subcellular particles, including yolk platelets, can be adequately described by one general equation of solute distribution.

@28@u

@29@2

@30@Reprint: Arguments against Alleged Proof of
the NA-K Pump in Studies of K + and Na + Distributions in
Amphibian Eggs.

@33@1, 20

@35@400229

@end@

NOTE: This is a complete citation, including subject indexing. The weighted terms are preceded by an asterisk. This format, which starts each field on a new line, is one method of inputting and displaying RTIS data. Alternatively, the citation is simply entered in a continuous stream:
@1@ADA156701@1A@A@2@p6/3@p6/3@Arguments against.Eggs,@10@Kirk L./Gibson....

When the document entry is complete, the @SI@ (store item) command is entered. The system then displays edit checks, security fields content, and field lengths and character types. The operator reviews the results of these checks and may either continue to edit the document or proceed to another. For classified documents, (cataloged only by senior catalogers), a screen print of the entry is reviewed by the supervisor or another designated senior cataloger. From one to several days after input, the Branch will receive printouts that highlight errors in cataloged TRs. These listings are marked and forwarded to the Database Support Branch for correction.

Once document citations are cataloged, a clerk in the Bibliographic Database Branch searches for the TRs in the AQ database. A listing of those found is sent to the Acquisition Section to update the AQ database and notify users who had requested the document that it is now available from DTIC. TRs are then counted, and the count is recorded on DTIC Form 444 and also summarized on DTIC Form 373. The TRs are sent to the Special Analysis Branch and DTIC Form 373 is submitted to management for inclusion in the daily pipeline report.

Index Technical Reports Process

The Special Analysis Branch is responsible for entering the data that will provide subject matter access to the citation. Subject access to TR database citations is primarily provided through the title, the document abstract, and two sets of index terms.

The first set of index terms is the DTIC Retrieval and Indexing Terminology (DRIT) thesaurus, a set of controlled terms developed by DTIC that closely reflect DoD terminology and interests. The second set consists of open-ended uncontrolled terms. Typically, these are either specialized terms (words or phrases) selected by the indexer and used in some narrow field of research, or they are specific names or

acronyms such as B-1 (bomber). The proper selection of indexing terms is important for information-retrieval access.

The Special Analysis Branch also assigns fields and groups to each TR. Fields and groups were originally established by the Committee on Scientific and Technical Information (COSATI). They are a subject-categorization scheme that assigns codes to major (fields) and subordinate (groups) areas of knowledge. Although not directly searchable in DROLS, fields and groups are used for registration, document ordering, and the production of recurring products.

TRs received in the Special Analysis Branch from the Bibliographic Database Branch are first counted and sorted. SBIN documents are sent to an analyst for review of subject codes and then to keying for any corrections or additions. Compendiums and TRs received in microfiche/microfilm format are assigned to an indexer, who performs the work manually without help from Machine-Aided Indexing (MAI). All other TR are assigned to indexers on the basis of subject matter and work load.

The indexer reviews the document abstract and reduces it to the maximum allowed length or, if it is too short, expands it. Where possible, the author-supplied subject terms are appended to the abstract. The indexer also records any translation notes on DTIC Form 41. The abstract is then forwarded to the Database Support Branch, which enters it via the RTIS.

TR citation abstracts and titles are then run through the MAI programs. MAI consists of a series of sophisticated computer programs that accept input text (abstract, title, etc.) and parse it into selected words and phrases. Those words and phrases are then mapped onto the most appropriate terms in the DRIT. The MAI programs are intended to be heuristic. Those programs that convert the text to phrases and the phrases to DRIT terms are table-driven and can be updated on the basis of indexer feedback to improve the programs' performance. These MAI programs have been used for a number of years with the WUIS and IR&D databases

but have only recently been applied to the TR database. The MAI programs are now the center of operations at the Special Analysis Branch.

The listings resulting from the MAI are sent to the Special Analysis Branch the next morning for post review. For classified TRs, the data-entry operator instructs the MAI programs to print the recommended terms on the listings but not apply them to the computer record in the Current File. The indexer reviews the listing and indicates terms to be deleted and added. Any weighted (primary) terms are also noted on the listing. During this work, the indexer has access to the actual TR to assist in review. The listings are then given to the section supervisor for review.

For unclassified TRs, the MAI is instructed to print the terms; it also adds the terms in the record on the computer. In this case, the indexer relies entirely on the listing, adding and deleting terms as appropriate. Unclassified TRs are not reviewed by the supervisor. For both classified and unclassified TRs, the indexer also records fields and groups and uncontrolled terms on the MAI listing. The marked-up MAI listings and the TRs are counted and noted on a "Special Analysis Branch Daily Activity Report" (DTIC Form 82) for use in the pipeline report, then returned to the Database Support Branch for entry/modification of the subject terms via RTIS.

This entry is a complex process. For classified TRs, the transcriber must enter the weighted terms first. For unclassified TRs, the situation is even more complex because the computer record already contains the MAI-posted terms. Those terms must be rearranged, with the weighted terms placed first and some of the other terms deleted or added. The transcriber must either perform a complex edit or key-in all the terms again. At that time, fields and groups, translation notes, and uncontrolled subject terms are also entered. The citation is then flagged for edit processing by the computer.

Verify Technical Reports

The Database Support Branch verifies the accuracy of the data entered for each TR. In addition, it is responsible for releasing citations to the actual TAB processing and for updating the master TR database.

Every night, edit programs process the document citations with indexing completed and produce reports to be delivered to the Database Support Branch the next morning. The three primary reports are the Print-E, Print-R, and the Text Verifier. The Print-E is a complete display of every citation and includes messages to highlight errors detected by the edit program. The Print-R is the same as the Print-E for citations that have no detected errors. The Text Verifier uses a portion of the MAI programs to detect spelling errors in the title, abstract, and other selected fields.

When the reports are received, selected information is copied from the summary reports (e.g., missing AD number, invalid subject terms) onto the Print-E and Print-R reports. Those reports are then matched with the documents or with the preceding day's printouts of recorrections. A proofreader then briefly reviews the already verified cataloging data, more thoroughly proofs the indexing data, and notes any errors on the report.

Next, the Text Verifier is consulted, and again any errors are marked on the Print-E/R. A physical TR is reviewed only once. It is then forwarded to the Master Microform Processing Branch for microfilming; any additional review consists of comparison with the marked-up listings. If no errors are detected in any of the fields used to produce the microfiche header (author, title, etc.), the AD number is listed on a "Daily Microfiche Header Sheet" (DTIC Form 386). At the end of the day, those forms are collected and entered into RTIS to generate the headers used for microfilming. The entry of those data results in an overnight computer run that generates

a tape and a listing of the header data. The Production Control Branch forwards the tape and listing to the Master Microform Processing Branch.

If errors are found in a document citation, they are corrected by data transcribers via RTIS, and a flag is set to rerun those items through the overnight edit programs; the listings are stored for comparison with the results of the edit checks the next day. When a citation is error-free, that fact is noted in the RTIS by the absence of a flag, and its listings are held for approximately three TAB cycles and then destroyed.

Other statistical reports are produced daily. They include the "count-out", a report listing processed citation AD numbers by category (e.g., classified, unannounced). The "TAPERS" report provides counts of the number of transactions (additions, changes, deletions) processed against the TR databases. The "overlay" report is particularly important because it detects the loss of any documents. RTIS requires a unique identifier for every record in its files and DTIC uses the AD number as that identifier. Whenever a new TR is entered, an AD number is assigned. If, however, a TR in the current file already has that number, RTIS replaces that document – without warning – with the new document data. Since AD numbers are unique, this replacement occurs only when one of the numbers is entered incorrectly. Since the AD number is also included within the document citation, the overlay report prints out any document citation in the Current File if the document name and the internal AD number disagree. This listing helps detect many overlay errors, but the problem still requires investigation, and the overlayed document citation must be reprocessed.

The activities of the Database Support Branch are a reflection of the processing cycle leading up to publication of the TABs. Each TAB consists of selected citations for TRs processed during the preceding 2 weeks. To keep pace with the volume of

incoming TRs, the production pipeline at DTIC must catalog an average of 120 documents a day.

Because the Database Support Branch is at the end of the citation input pipeline, it receives few TRs early in the cycle; however, the number of TRs increase as the cycle progresses. Every day, the Branch completes some citations and must correct others. As the cycle nears the end, the Branch has accumulated a large number of correct citations and a growing number of errors for correction. In the last days of the cycle, the workload may be heavy and it must be completed by the TAB deadline. Once all the document citations in a given TAB are verified, the Database Support Branch informs the Production Control Branch that it can begin publishing the TAB, updating the TR master file, and generating recurring products. Once the updates are completed and the citations are available in the TR database, staff members from the Database Support Branch use RTIS to individually delete each of the roughly 1,200 citations in that TAB from the current file. That action completes processing of new TR documents by the Directorate of Database Services.

Reproduce Technical Reports

The Database Support Branch passes on TRs whose citations have been reviewed at least once to the Master Microform Processing Branch. It also enters data initiating a computer run that produces a computer tape of all microfiche header data successfully entered that day. The following day the tape and a listing of the tape's contents are sent to the Master Microform Processing Branch. The AD numbers represented on the tape are not necessarily the same as those on the paper copy TRs delivered to the Branch on the same or previous day, but both should be received within a few days of each other.

The Master Microform Processing Branch receives and logs the incoming TRs and prepares them for filming by sorting them by AD number and breaking them apart. When a microfiche header tape and listings are received, all the TRs which

are on the tape are gathered. A tape is limited by program controls to contain no more headers than can be filmed on a camera in a day. Currently, DTIC's standard daily TR production can be processed by one camera. A camera operator begins filming the TRs cover to cover on one of the four microfiche production cameras. The camera's CRT indicates which TR is to be filmed next. The microfiche from the camera is developed in roll form, and developed film is spot checked by a densitometer and forwarded to quality control. There it is inspected frame by frame for format, resolution, background density and other quality aspects. When the film passes inspection, it is sent to the ADD team in the Microfiche Maintenance and Reproduction Branch. A microfiche that does not pass inspection is "X"ed through and the TR is refilmed. If the film quality is unsatisfactory because the physical quality of the TR is poor, an effort is made through the Office of Quality Assurance and the Selection Section to obtain a better copy from the source. If a better copy cannot be found the AD number may be canceled or the TR is filmed, but made available to users only as microfiche. The TR is restapled together and forwarded to the Inventory Team in the Receiving and Distribution Branch unless it is a loan copy, in which case it is returned to the source. If it is an unclassified/unlimited document, it is sent to the National Technical Information System (NTIS).

The Microfiche Maintenance and Reproduction Branch receives the microfiche in roll form. It cuts the microfiche into individual pieces and places them in protective bags. These bags are also marked to reflect the classification level of the microfiche. As a part of the ADD process, the microfiche are reproduced for users as needed. Reproduction includes as a minimum a working copy for DTIC usage, a copy to be sent to disaster storage, and for all unclassified/unlimited microfiche, a copy for NTIS. Upon completion of the ADD process, the master is placed in the Archival Storage area to be used again only if the working copy is damaged. The working copy is placed in the working copy storage cabinets.

Inventory Technical Reports

When TRs are first received at DTIC by the mail room staff, extra copies (more than two) are held on a shelf. The two are forwarded to the Selection Section and then to the Bibliographic Database Branch where they are assigned an AD number. One copy is used for further processing, and that copy eventually reaches the Master Microform Branch for filming. The other copy is immediately returned to the mail room where the assigned AD number is stamped or hand copied onto any other copies that were held over (frequently as many as 12 copies are submitted). The mail room then forwards those extra copies to the Inventory Team, which places them on shelves by AD number and they are held for document ordering. At the time the TRs are sent to the inventory room, the mail room completes a form that indicates the AD number and how many copies are being added to the inventory. These data are keypunched by the Production Control Branch and updated into the Request Processing System, which keeps track of the inventory levels. Microfilmed copies that are not sent to NTIS are received from the Master Microform Processing Branch and added to inventory in the same manner.

When a TR is ordered as hard copy, the Request Processing System first fills the order from paper copy inventory. If inventory is available, the system produces a "picking ticket," and reduces the inventory quantity by the number ordered.

DTIC has only limited space for maintaining its paper copy inventory. Procedures state that any TRs remaining on the shelves after 6 months should be destroyed. Unclassified/unlimited TRs are simply thrown out. Classified TRs are burned before two witnesses who sign certification documents. Limited documents are burned, but no records are maintained. Inventory stocks are not purged on a regular 6-month basis, but only as shelf space becomes limited or as staff time is available.

Receive Technical Report Updates

TR citations are rarely changed after they are stored in a database. Such changes, referred to as "file maintenance operations," are controlled by staff members in the Database Support Branch. That Branch processes three major types of changes: security classification or limitation changes, superseded or canceled TRs, and miscellaneous changes. The latter occur when an error – typically a typographical or spelling error – is noted in a citation. When the Branch is notified of an error, the TR citation is extracted from the TR database and corrected via RTIS. The next day, a Print-E or Print-R report is received and verified. Once correct, the revised citation is processed as part of the current TAB for the TR database update but does not appear in any of the announcement products.

Supersessions usually occur either when DTIC is replacing the SBIN AD number with a DTIC AD number or when the source is replacing a document with a new version. (Changes in security guideline documents are a major example of this type of replacement.) Supersessions and cancellations are usually processed by the Selection Section, which forwards a completed DTIC Form 28 to the Database Support Branch. That Branch then cancels the old AD citation in the TR database and cross-references the superseded TR to the new TR, which will have been processed in the normal flow.

Security information related to citation and TR classification and distribution is maintained in more than eight different fields in the TR database record. Usage information is also kept in a separate tape file, the Request Processing History File, which contains the order processing and document inventory records. It can identify every user who has ordered any given TR, a capability of particular importance for processing upgrades in document classification.

Document or citation classification upgrades are initiated by receipt of a written request from the source agency. A standard file-maintenance transaction is used

to update the TR database. This transaction not only changes classification levels, but also records the TAB cycle during which the change in classification and/or limitation is made (in the open-ended terms field), and adds the reason for the change. While some security-related data are automatically copied to the inventory database from the TR update, other information is updated directly by completion of an "Inventory Change Card Sheet" (DTIC Form 25) and keypunching of the transactions. A classification upgrade also requires a printout from the order history portion of the Request Processing System, that indicates users who ordered the TR. This printout is produced by completing a "Management Information Inquiry System Worksheet" (DTIC Form 381) and having computer cards keypunched from that form to produce the list. All TR holders on the list are notified by letter of the classification upgrade.

A TR's classification can be downgraded at the request of the sponsor, automatically by date or event. (Automatic downgrade by event is not used by DTIC.) Downgrading at the sponsor's request occurs in exactly the same way as upgrading, except downgrading changes are announced in TAB and individual users need not be contacted. Date-related downgrades are identified by periodic printing of the "Automatic Downgrade" report. Changes in the security and limitation data entered via RTIS are detected by the edit programs, which produce changes to the inventory file where a "before-and-after" change report is generated to verify the change.

Security and limitation changes are highlighted in "A" pages of the TAB publication. A rough copy of this section is generated, displaying the exact changes that are scheduled to appear in the TAB. The result is proofread by the Database Support Branch. These TAB sections are also accumulated and published in an annual summary of security changes. This step completes security processing, except that DTIC also provides requesting libraries with a yearly summary of security changes for documents cataloged in the TR database.

Most updates to TRs also have to be reflected in the microfiche copy of the document. For security changes, the Database Support Branch forwards to the Microfiche Maintenance and Reproduction Branch a report listing all TRs undergoing a security change. Both the working copy and the master copy are pulled. The Master Microform Processing Branch films a computer listing citing the change in classification and the authority for it; that film is developed, cut, and placed on the master copy. A new working and disaster storage copy are reproduced and the copies are rebagged and refiled.

Changes in the header data or the actual text of the TR are handled similarly to classification changes. However, in some cases, the document may have to be refilmed.

Notification of supersessions on cancellations are submitted from the Selection Section. For those items, both the master microfiche and the working copy are pulled and destroyed.

For all of these updates, NTIS is notified of any event affecting copies it retains.

Store Shared Bibliographic Input Network/Technical Reports

This process describes the activities performed by SBIN sites.

SBIN enables remote DoD technical libraries and information centers to enter citations directly into the TR database by means of the RTIS. SBIN sites may use the same terminals to input a document that they use to search the DTIC databases.

SBIN has classified access to DTIC databases over dedicated communications lines, unclassified access over dedicated lines, and unclassified access over dial-up communications lines. More than 50 technical libraries and Information Analysis Centers (IACs) participate in SBIN. In 1985, those sites accounted for 6 percent of the total citations entering the TR database; to date in FY86, 4 percent of TR input has come through SBIN.

To assist SBIN organizations and DoD in general, the DTIC SBIN project was established to:

- Issue early announcements of new reports to the DoD community
- Provide more detailed and accurate subject indexing by local experts
- Share document processing costs within the DoD community
- Enable each SBIN site to use the TR database as its local catalog by adding its local holding symbol to the record.

This last feature is a powerful capability for libraries that do not maintain their own automated catalog. To use it, the SBIN site enters a complete citation plus the holding symbol assigned to its local library or, if the citation is already present, sites need not enter full citations. If the SBIN sites duplicate-check the TR database or the Current File and find the citations already in the DTIC database, they may simply add their holding symbols to the record by submitting keypunched cards or magnetic tapes to DTIC. Some sites prefer this latter method of loading large numbers of holding symbols to reduce the amount of time spent online.

Another feature offered to SBIN sites is the ability to obtain from DTIC printed bibliographies that can serve as hard copy catalogs of their collection.

The holding symbol capability is essential to libraries that lack automated, online catalogs, but none of the other features offer any significant advantages to a site performing input. For libraries that maintain their own systems, SBIN input represents a duplication of cataloging effort. Therefore, many SBIN sites do not input document citations and prefer to mail their documents to DTIC for cataloging.

Where sites do perform SBIN input, they perform them in exactly the same manner as internal DTIC input. Items are cataloged in accordance with DTIC cataloging guidelines (which frequently differ from local practice). RTIS is also used as in DTIC; however, since SBIN members use RTIS far less than do DTIC catalogers, the lack of formatted screens and other tools tends to lengthen the time

required to enter a citation. When citations are entered, they are transmitted to DTIC and enter the same RTIS files as do citations for internal pipeline documents. They become part of whatever TAB cycle is currently in process.

The SBIN document citations are processed overnight along with the other citations, and the edit lists are printed the next morning. Members of the Database Support Branch review and mark the listings as time allows. They then separate the lists by contributing site and mail the lists back to the sites. A SBIN site reviews the list and may make corrections. Because SBIN citations become part of the TAB cycle, these corrections are updated to the TR database as part of that cycle but not included in any announcement product. Depending on when the SBIN document citation is entered, it may be updated the following night (perhaps with errors) or held up from entering the TR database for as long as 2 weeks.

TRs whose citations are entered through SBIN should still be sent by their releasing organizations to DTIC to be filmed and made available for ordering. These documents become part of the DTIC pipeline and are recognized as SBIN documents when a descriptive cataloger duplicate-checks them. As previously described, DTIC reviews and changes SBIN cataloged data to conform with DTIC cataloging guidelines and the physical document. DTIC also reviews SBIN-entered citations for potential addition of subject terms and changes the AD number to show that the document is available from DTIC. This work is further reviewed by the Database Support Branch as part of the pipeline process. Hence, SBIN citations still require significant DTIC effort before being loaded into the TR database.

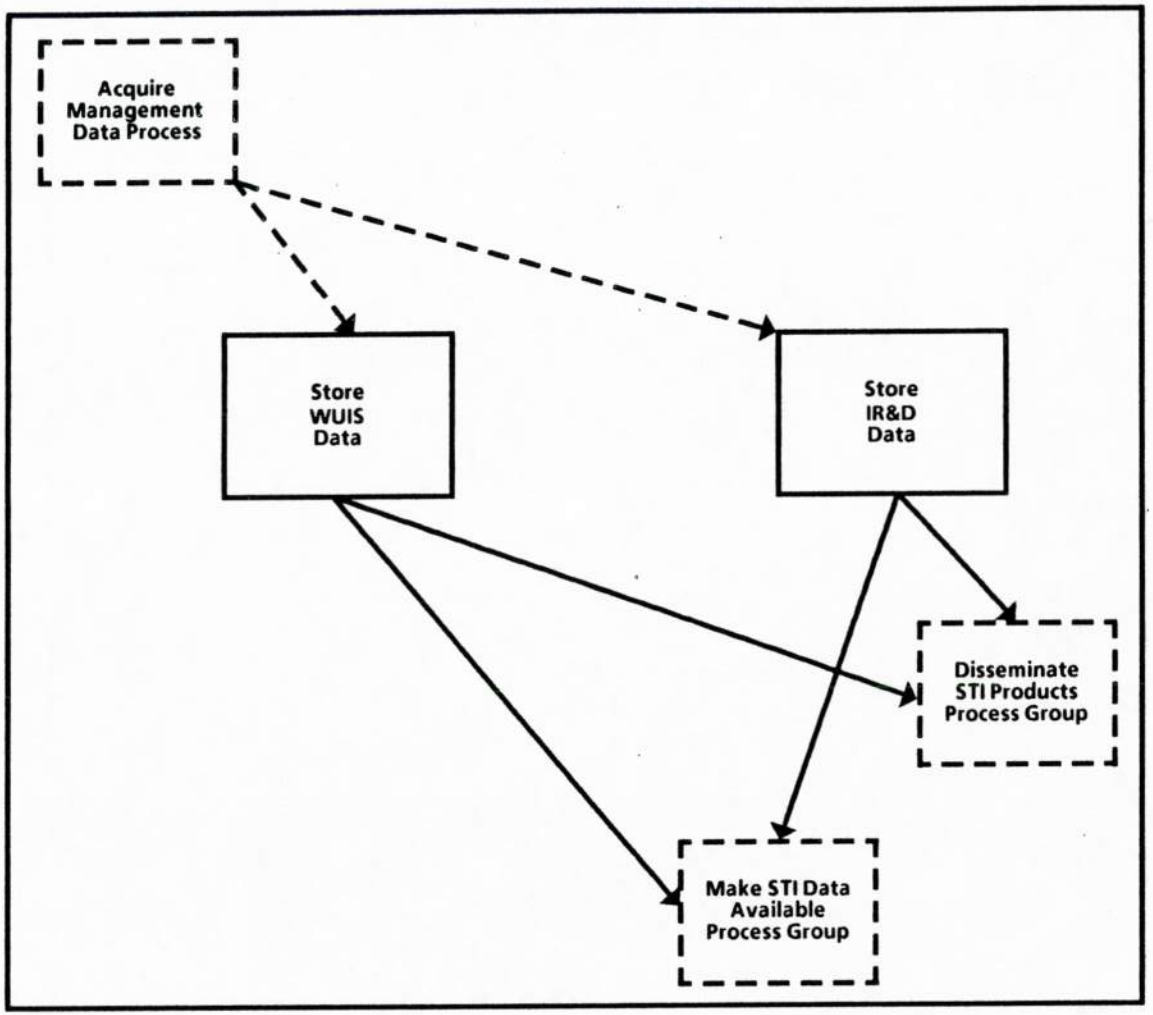
IACs may also enter TR data through RTIS. DTIC has reserved several fields within the TR database specifically for IAC processing. Included in these reserved fields are additional subject fields. These are used in addition to normal retrieval for the publication of an IAC subject index.

Small amounts of WUIS data are also entered through remote terminals in the same manner as TR data. For WUIS and IAC data this process is referred to as remote input, while data from SBIN sites are referred to strictly as TR input.

Store Management Data Process Group

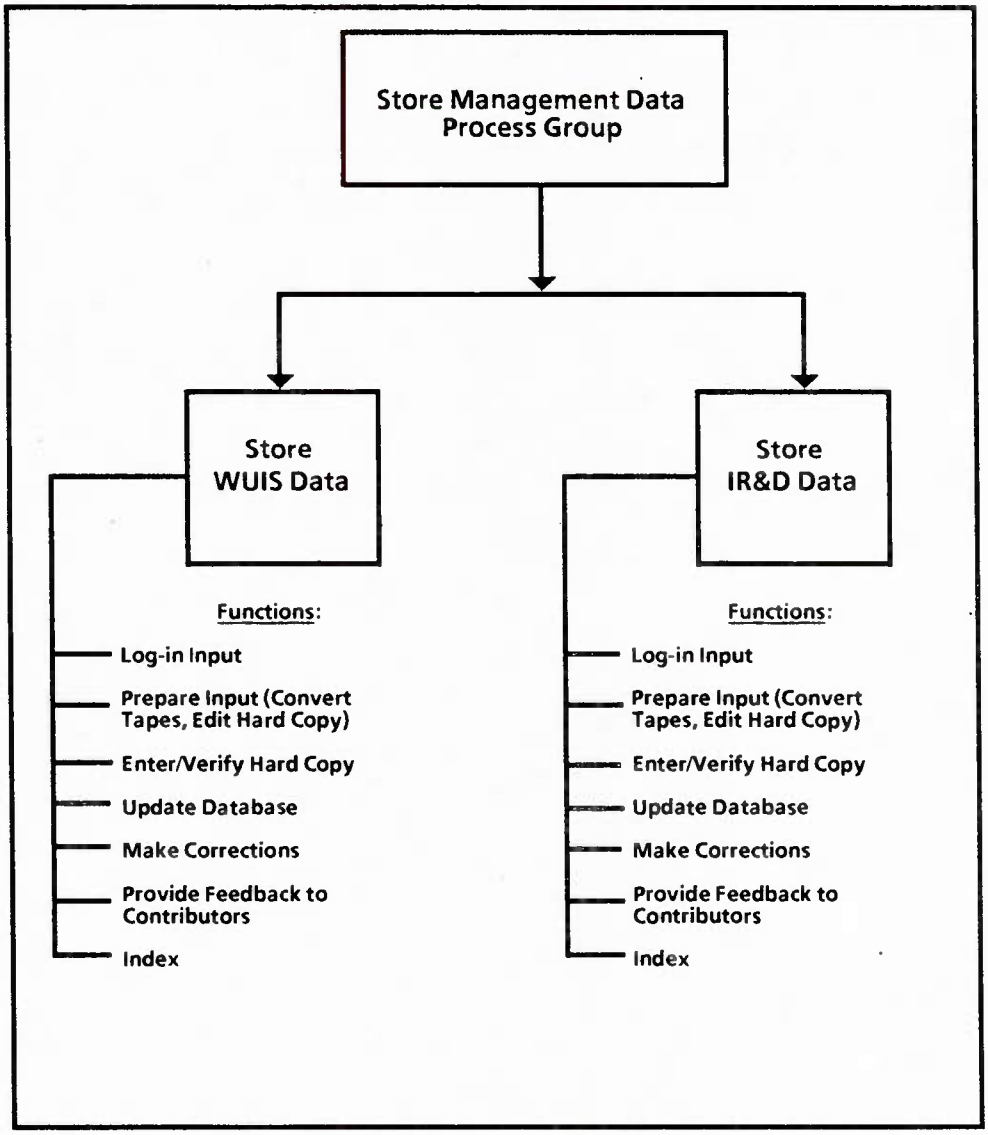
There are two active management databases, WUIS and IR&D. The now inactive Program Summary (PS) Database and Program Element Descriptive Summary (PEDS), currently under development, are not discussed in this section. The WUIS database contains data on R&D projects being conducted by DoD Components; the IR&D database includes data about independent projects run by DoD contractors (industry, academia, etc.). Both databases are managed and controlled within DTIC by the R&E Programs Database Branch in the Directorate of Database Services. That Branch is primarily self-contained and is responsible for almost all aspects of the management databases. Inputs to the WUIS and IR&D databases are processed in a substantially different manner from inputs to the TR database. Data entry is still performed through RTIS, but the data is then processed by the Research and Engineering General Input System (REGIS). Additionally, although weekly and biweekly updates are produced, the WUIS and IR&D processing does not have a production cycle corresponding to the TAB. The management databases collect data that describe the status of Research and Development (R&D) work in progress and that may later be documented through TRs. The information contains project, budget, start date, performing organizations, responsible individuals, etc. Unlike TRs, this information is dynamic and remains so until the project is terminated. For that reason, as the Military Services submit data on magnetic tape to DTIC, they may mix new records with modifications or replacements to current ones. Consequently, this description combines both storing and updating management data. Figure 3-7 depicts the processes in this process group and the functions of those processes are summarized in Figure 3-8.

FIGURE 3-7. STORE MANAGEMENT DATA PROCESS GROUP



NOTE: Dotted box indicates previous or next process group or process.

FIGURE 3-8. STORE MANAGEMENT DATA PROCESS GROUP FUNCTIONS



Store Work Unit Information System Data

The WUIS database contains approximately 190,000 records, of which some 26,000 contain data on active projects. In a year, approximately 10,000 new work units are initiated and an average of 70,000 projects undergo changes or are closed out.

WUIS data arrive at DTIC on several different media including magnetic tape (95 percent), punched cards, online entry (via RTIS), and hard copy "Research and Technology Work Unit Summary" (DD Form 1498). Tapes are formatted as card-image transactions, as defined in DoD Manual 3200.12-M-1, "Research and Technology Work Unit Information System Regulation." Despite the standards defined in the manual, the tapes arrive in a variety of physically different forms, e.g., some use American Standard Code for Information Interchange, and others use the Extended Binary Coded Decimal Interchange Code format. Thus, DTIC must maintain several different programs to read these tapes. These DTIC conversion programs must be modified whenever changes in submitter's hardware, software, or personnel cause tape format changes. The quality of these tapes also varies, with tapes sometimes returned as unreadable. Tapes are submitted weekly by DoD Components.

When a tape is received at DTIC, a clerk logs it in and determines which conversion program to run. The tape is then submitted to computer operations for conversion to Sperry format and printing a list. This list is reviewed by the R&E Programs Database Branch to ensure that it is in the correct format and can be processed by the update program. Remote terminal online data input also results in print listings, which are reviewed for accuracy and completeness. Branch personnel call the submitter to discuss any problems.

DD Forms 1498 are marked by control clerks and editors and then submitted to data transcribers for entry via RTIS. The mark-up consists of reformatting the data (e.g., date or adding codes) into DTIC format and adding field tags for RTIS input.

All data for the week are submitted for database update on Friday night. The update program accepts all transactions and applies them against the old master file tape and generates a new master tape. The update program also generates the Contributor Summary List (CSL), several sets of statistics, and an inverted file-transaction tape. The updated CSL is a formatted printout of each item for which a transaction occurred (i.e., new record, change to existing record, or deletion of existing record). In addition to the complete record, the CSL prints messages for any edit/audit errors detected by the update program. The update program separates these errors into major and minor ones. Records with minor errors are processed in the database; records with major errors are not. Both types of errors are noted in the CSL. The R&E Programs Database Branch reviews the CSL and statistical reports on Monday. If everything is acceptable, it directs computer operations to load the new inverted and master files to DROLS that night.

During the succeeding week, corrections are made to any errors indicated on the CSL for inputs from the R&E Programs Database Branch. The Branch corrects some errors from online or tape submissions. As a minimum, they correct errors that prevent the record from being loaded to the database or other errors that can be easily corrected. The CSLs are then mailed back to the submitters for additional corrections (which may or may not be made). Thus, some of the records loaded into the database may contain and retain errors. Even the errors corrected by the Branch are not added to the database until the next weekly update.

All WUIS records with input transactions applied to any of the fields (e.g., title, keywords) that the MAI processes are read by the MAI program, which posts the terms. These MAI output files are then added to the next database update. The

output listings from the MAI process are also printed and forwarded to the Special Analysis Branch for post review (because of staff shortages in the Special Analysis and Database Support Branches, many records are updated into the database only with the terms assigned by MAI programs). After post review, the marked-up listings are returned to the R&E Programs Database Branch for input, review, and updating into the master database. This completes the processing cycle for WUIS inputs.

Store Independent Research and Development Data

The IR&D database consists of more than 71,800 records, with over 8,800 input transactions being submitted in FY85. The IR&D input is received once a year from each submitter, and thus overall workload is not evenly distributed. More than 60 percent of the reports are received between April and August, corresponding to the budget cycle followed by the submitting organizations. Submissions are all in the form of hard copy "Independent Research and Development Data Sheets" (DTIC Form 271) or magnetic tape.

IR&D input is processed in essentially the same manner as WUIS input. Hard copy submissions are received and logged-in by a control clerk in the R&E Programs Database Branch. They are then forwarded to an editor for marking up, which consists of adding accession numbers and RTIS field indicators, and converting the data into DTIC formats. These marked-up items are then forwarded to the Database Support Branch where they are entered through RTIS. These data are also updated through REGIS as WUIS, but with different parameters and tape files.

The frequency of IR&D updates varies with the volume of input. During peak periods it is updated weekly, while in low periods it may be updated as seldom as once a month. IR&D tape input is received, logged in, and forwarded to the Production Control Branch for conversion to DTIC format. The conversion produces a listing that is reviewed for acceptability. Unacceptable tapes are returned to the

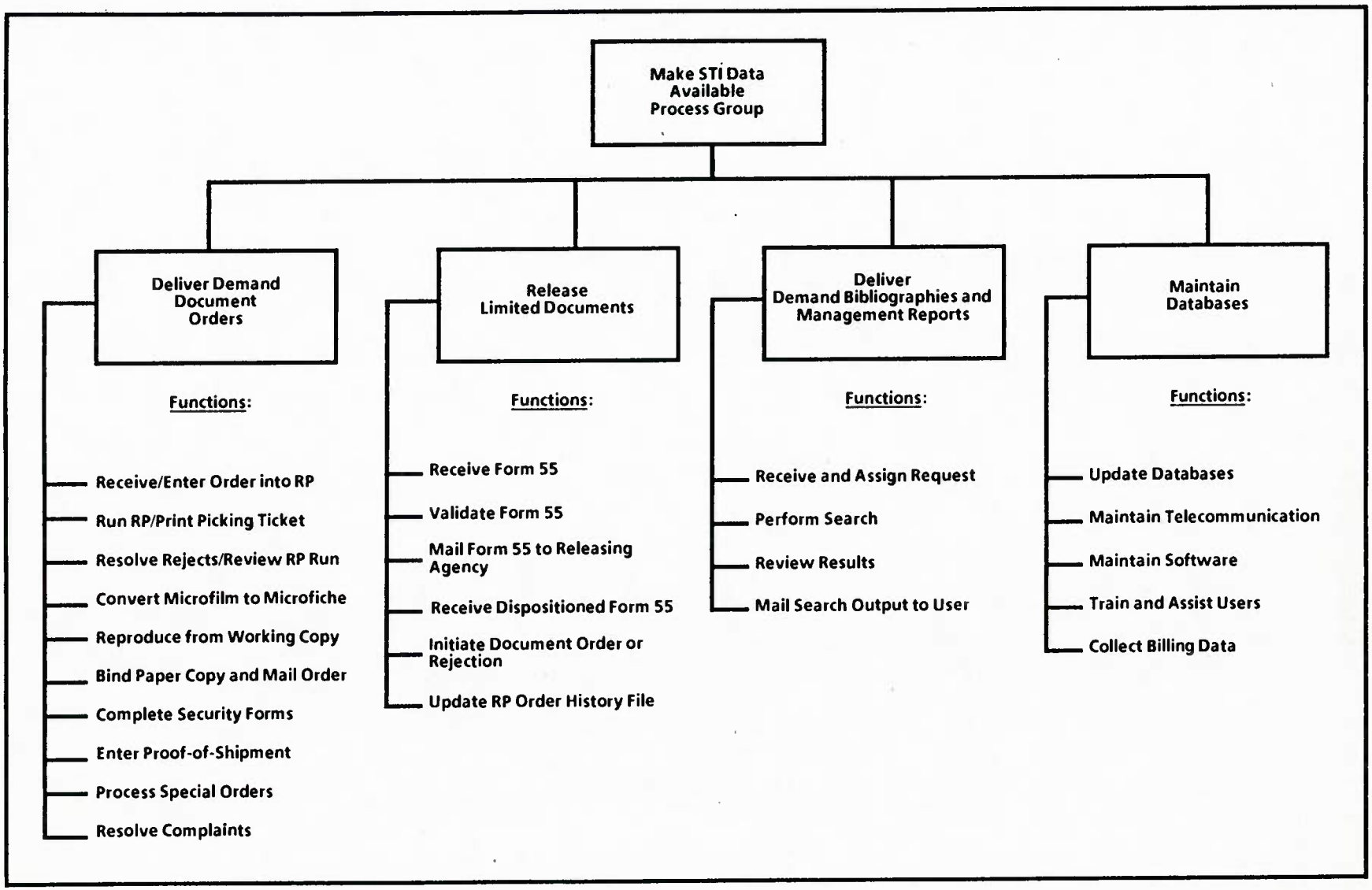
submitter for correction. Acceptable tapes are updated with the hard copy data. The update produces a CSL that is proofread by an R&E Programs Database Branch proofreader and corrections made in RTIS by the R&E Program Database Branch for the next update. CSLs for tape input receive some corrections and are then returned to submitters. IR&D data are also processed by MAI programs with minimal manual intervention. The subject retrieval of management data may be impaired because the WUIS and IR&D databases limit the length of the project descriptions text and the number of subject terms. The submitters often ignore these limitations and the descriptive and subject data, therefore, are truncated or overlay other data. Both WUIS and IR&D data can be affected by this, but it mostly occurs with IR&D data.

Make Scientific And Technical Information Data Available Process Group

The process group described in this section summarizes the processes that make STI data available for DTIC's users (see Figure 3-9). These processes are responsive in the sense that the user initiates the process as opposed to the next process group where DTIC initiates the actions. This section includes the following four processes:

- Deliver Demand Document Orders: Reproduce a TR document in paper copy or microfiche form, based on a customer request for that specific document
- Release Limited Documents: Obtain approval for requesters of TRs to receive documents with limited distributions
- Deliver Demand Bibliography and Management Reports: Produce a bibliography of citations from any of DTIC's databases based on a request from the customer
- Maintain Databases: Support remote customer use of DROLS to access the databases, and update the databases with new material.

FIGURE 3-9. MAKE STI DATA AVAILABLE PROCESS GROUP FUNCTIONS



Deliver Demand Document Orders

Demand document ordering shipped 335,561 TRs in FY85, averaging 900 paper copies and 400 (30 percent) microfiche copies per workday. Approximately 200 (18 percent) were classified. In terms of DTIC support resources consumed, this process is by far the largest one, with as many as eight DTIC organizations participating (see Figure 3-10).

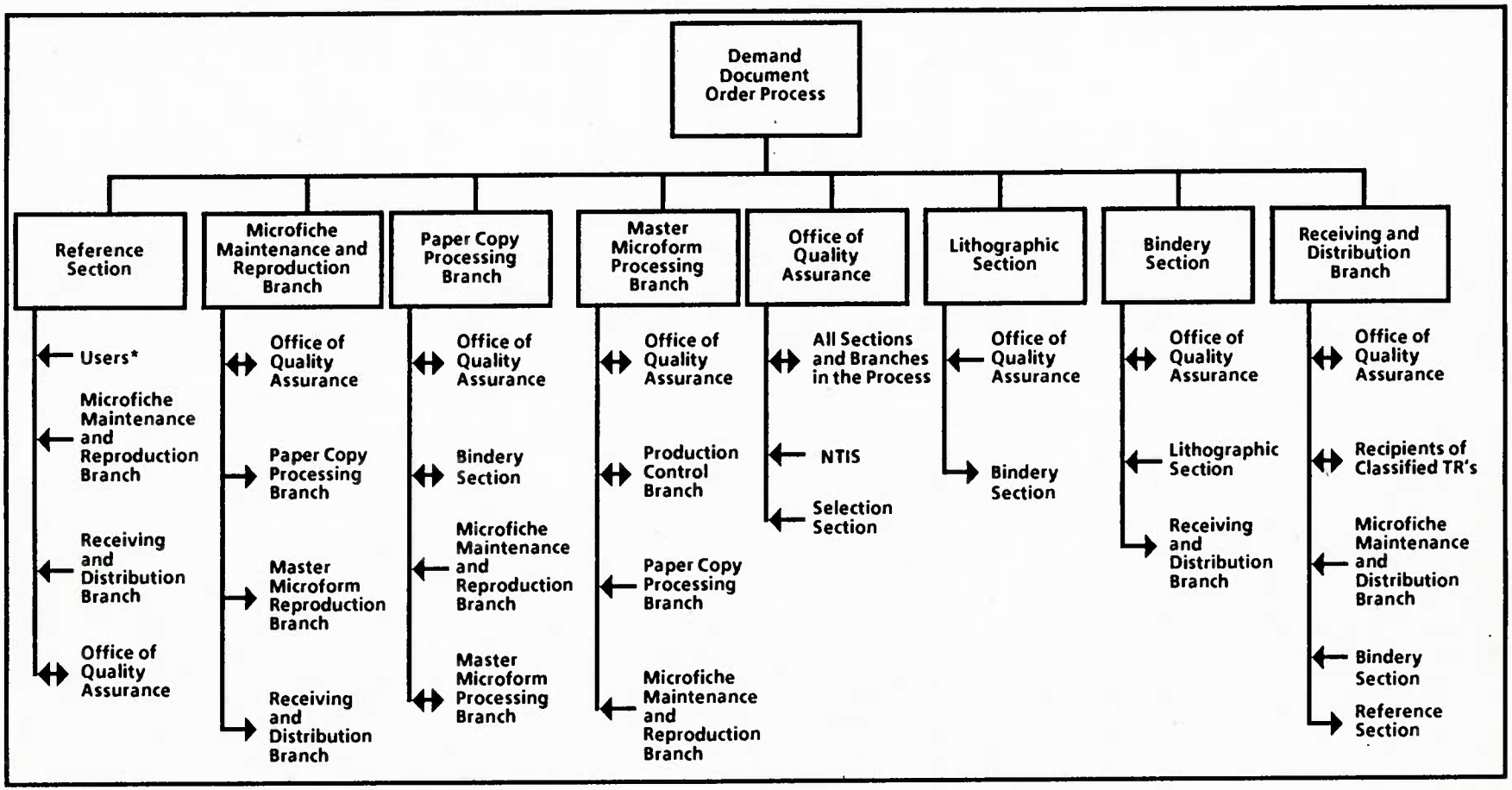
Demand orders can be initiated by the user in the following ways:

- Online via a DROLS terminal; entry is performed at the user site or by submitting the request through a field office either by telephone, mail, or in person. In the past year, approximately half the orders were submitted online.
- Through the Reference Section; entry may be either by mail (a DTIC Form 1 or letter), telephone, or in person (rarely done).
- Through NTIS; users may request DTIC TRs through NTIS, which accepts the order and submits it to DTIC on a tape that is processed on a weekly basis into the Request Processing System.

Regardless of the methods used, the first step that DTIC must perform is to confirm that the requester is a registered DTIC user. For online requests submitted by the user, this step is accomplished by the user entering a valid user identification number. For requests submitted to the Reference Section or Field Offices, a user code number is required and, in some cases, a NTIS deposit account number. If the user cannot supply that information, the Dissemination Authority List (DAL) can be used to refer him to an authorized person in his organization. The following paragraphs describe the steps taken to complete an order.

Requests from non-registered users are handled differently depending on the nature of the organization or individual making the request, and the nature of the request. Organizations that are potential users are encouraged to become registered users. If the organization is a Government entity, the requested document may even

FIGURE 3-10. DEMAND DOCUMENT ORDER PROCESS PARTICIPANTS



*Users may also enter orders online.

be sent prior to their becoming a registered user. The general public is referred to NTIS or to the releasing agency responsible for the document.

Foreign requesters cannot obtain TRs from DTIC; they are referred to the information officer at their U.S. Embassy. If the requested report is classified or limited, DTIC also notifies the appropriate DoD foreign disclosure officials (except for requests from Great Britain, Australia, or Canada). Requests from unfriendly countries are forwarded to the Command Security Office [DLA-TO (DTIC)].

Special handling is afforded to requests from non-registered Congressional and high-ranking Government officials. If the requested document is classified or limited, DTIC telephones the releasing agency for release approval (with a written request to follow). If the release is approved, DTIC ships the document; if the release is disapproved, DTIC notifies the requester.

For registered users, the Reference Section (or Field Office) orders the TR if the AD number is known. Frequently, the user does not know the AD number and may have only a partial citation of the TR number. DTIC then attempts to identify the document, primarily through searches using DROLS and/or the card catalog. If the document cannot be identified the requester is so notified. If the user provides a reasonably complete citation (contract number, author, title, date, etc.) and the document is not at DTIC, the Reference Section sends a written request to the Acquisition Section to obtain the document and notifies the requester. The Reference Section maintains a record of the request so that the user can be notified if the TR is obtained or denied. Records are kept of all requests: if the request was made in writing, it is filed; if it was made by telephone, conversation records are retained for 3 months.

If an AD number is found the order is placed by the Reference Section, which records the order data on a DTIC Form 273. Periodically, the Reference specialists give the DTIC Form (containing multiple orders) to a clerk to input. The clerk keys

the data from all types of request forms – DTIC Forms 273, DTIC Forms 1, DTIC Forms 55 (see discussion of the Release Limited Documents Process below), and letters – into a temporary holding file on the Sperry 1100/61 computer. Orders submitted online are stored in a similar file on the Sperry 1100/82 computer. Each night those files are submitted to the Request Processing (RP) system on the Sperry 1100/82. The system matches the user request (desired media, number of copies desired, etc.) and authorization against that of the requested TR based upon a complex set of comparisons, (which include classification level, fields and groups, and type of organization) and the system either approves or rejects the request. At that point, the processing of online, NTIS tapes, and manually submitted requests become the same. The steps that are described in the following paragraphs are taken if the requested TR is unlimited. For TRs with limitation statements, additional steps may be necessary (see discussion of the Release Limited Documents Process below), however once the release has been approved, limited documents follow the flow described here.

On the following morning, the RP system prints "picking tickets" for TR orders successfully completed and notices for all rejected orders. The system identifies nearly 30 reasons for rejecting a document, including incorrect AD number, incorrect NTIS deposit account, and inappropriate access to the TR. Orders are reviewed to determine the cause for rejection (e.g., keying error). If an error is determined to be the cause of the rejection, the TR is reordered. If the cause for rejection cannot be resolved, the notice is mailed to the user. When possible, additional information on the problem and document source data are extracted from the TR database and attached to the notice.

Numerous listings that summarize results of a RP computer run are printed each morning. Those listings are analyzed in the Reference Services Branch to

ensure proper running of the system. Any computer run related problems that are identified are resolved and corrected by the ADP Division.

For successful transactions, the picking ticket is printed on cardboard stock paper and has two portions that can be separated along a perforated line. One side contains complete order information, and the requester's mailing information is on the other side. The picking tickets are sorted into type of processing and then AD number.

The next step is to reproduce the TR from a working copy. The exact steps vary depending on several conditions: the media of the working copy (paper, microfilm, or microfiche), the media the user requested (paper copy or microfiche), the document's classification, the priority, and the number of copies required. Four basic paths are followed and they are described below:

(1) Paper copy original to be delivered as paper copy: The picking tickets are sent to the Inventory Team in the Receiving and Distribution Branch; it pulls the appropriate TR and delivers it to the Distribution Team. The computer already shows the reduced inventory amount when the picking ticket is generated.

(2) Microfiche original to be delivered as paper copy: The Microfiche Maintenance and Reproduction Branch pulls the working copy from the storage cabinets (in batches), and places the microfiche in date-of-order sequence in an area in the Paper Copy Processing Branch where operators, as they complete preceding work, pick up material and produce the "blow-back" copies on one of the 970 copier machines. Completed paper copies are placed on a hand truck which is taken to the Bindery Section, two or three times a day. In cases in which quantities of more than 20 are needed, the Paper Copy Processing Branch forwards the order to the Office of Quality Assurance, which tries to obtain an original of the TR either from inventory or NTIS. If it cannot obtain an original, the Paper Copy Processing Branch produces one copy. The Quality Assurance Office attaches a DD Form 843 to the TR and sends it to the Lithographic Section where the additional copies are produced (see discussion about the Print STI and Other Materials Process for more details on the Lithographic Section's operations). The Lithographic Section sends completed work to the Bindery Section where the TR is bound and forwarded to the Receiving and Distribution Branch.

(3) Microfiche original to be delivered as microfiche: The Microfiche Maintenance and Reproduction Branch pulls the working copy and produces the needed number of copies. Unclassified TRs are cold-sealed with the address portion of the picking ticket and placed in a mail bag in

the Branch, rather than being forwarded to the Receiving and Distribution Branch. Classified TRs are sent to the Receiving and Distribution Branch. For this flow and for microfiche sent to the Paper Copy Branch, the working copy is placed in a box with other processed microfiche. They are sorted and refiled by the night shift.

(4) Microfilm original to be delivered as either paper copy or microfiche: This is the most complex path since DTIC uses it as the opportunity to convert the microfilm to microfiche. The microfilm is pulled by the Microfiche Maintenance and Reproduction Branch. If it is 35mm microfilm, it is given to the Master Microform Processing Branch which converts it to microfiche and returns the master copy. If it is 16mm microfilm, it is sent to the Paper Copy Processing Branch which converts it to paper copy using the Copyflo machine to convert the film image onto roll paper. From there it goes to the Bindery Section to be cut into individual pages, and then to the Master Microform Processing Branch which rephotographs it from the paper copy to produce a new master microfiche. The master microfiche is given to the Microfiche Maintenance and Reproduction Branch. In both cases, when the new master microfiche is being created, a DTIC Form 24 containing header data is submitted to the Production Control Branch where the data are keypunched. A header tape, a listing, and keypunch cards are created. Once the new master is created, the Microfiche Maintenance Branch produces a working copy that is processed through Path 2 or 3, depending on the type of media to be delivered. The keypunch cards are returned to the Production Control Branch where they are used to update the inventory file with film-to-fiche conversion.

All four paths (except for unclassified TRs delivered as microfiche) result in the TR and the picking ticket going to the Distribution Team in the Receiving and Distribution Branch. There, unclassified material is run through the cold sealer machine and placed in mail bags.

Classified material is wrapped as per DoD regulations; it is double-wrapped, a four part DTIC Form 67 is completed, and one copy of the form is retained at DTIC and the others mailed with the package. The package is placed in a separately locked mail bag. These classified TRs carry receipts that must be signed for by the recipient and returned to DTIC. DTIC maintains a copy of the receipt in a manual file arranged by shipping date and AD number. When the receipt is returned, it is matched with the copy and one is then discarded and the other filed in an inactive file. If a receipt is not received within 30 days, the recipient is contacted and the item traced if necessary.

When the TR is mailed the nonaddress half of the picking ticket is forwarded to the Reference Section where it is entered into the RP system as a "proof of shipment" entry. This step concludes the Deliver Demand Order Process.

Priority or special orders can be initiated by the Reference Section when TRs are needed for DTIC personnel, in response to complaints, and for other reasons as necessary. In particular, they will be issued for orders by Members of Congress or other high-ranking Government officials. The computer sorts special orders first when it generates the picking tickets. When received by the Microfiche Maintenance and Reproduction Branch, they are logged and pulled first. Unless they are to be produced as microfiche, they are then taken to the Paper Copy Branch where a blue DTIC Form 21 is attached. They are distributed to the 970 copier operators who reproduce them ahead of any other work. Once reproduced they are immediately transferred to the Bindery Section where they are also processed before routine orders. The Bindery Section files the DTIC Form 21 and forwards the TRs to the Receiving and Distribution Branch, which ships them as indicated on the picking ticket.

In some cases congressional requests are handled on an even higher priority; the request is hand-carried from station to station and handled first. These types of requests can be completed in as few as 2 hours. Small Business Innovation Research (SBIR) requests are also given special handling and are described later in this chapter.

A last type of nonroutine order consists of those requests for any of the approximately 200,000 older TRs that predate the establishment of DTIC's computer systems. These orders are nonroutine since they must be processed entirely by hand. Once the order is received, the TR data must be verified in the card catalog by the Reference Section. The user data are verified using the Master User Access and Control (MUAC) file. A DTIC Form 1 is handwritten and a transmission log is noted

when it is sent to the Microfiche Maintenance and Reproduction Branch, which treats the DTIC Form 1 as a picking ticket. When the TR is shipped to the user, the DTIC Form 1 is returned to the Reference Section as proof-of-shipment and the Reference Section notes the completion in the log and then manually submits the bill to NTIS.

The process for the Deliver Demand Document Orders does not include any formal quality control functions; however, at any step in the process, the physical quality of the final product may be noted as inadequate. The document is then returned to the Microfiche Maintenance and Reproduction Branch which, in conjunction with the Office of Quality Assurance, determines whether the problem is in DTIC's production processes or in the poor quality of the original TR. If DTIC production process is at fault, the product is rerun; if the original is of poor quality, the product is marked as the best available copy and the Office of Quality Assurance attempts to acquire a new copy of the TR through the Selection Section.

The Reference Section manages a complaint desk. Calls or letters from users are recorded on a conversation record and complaints are tracked and resolved individually. Tracking a missing TR can be particularly difficult because, for most routine orders, no audit trail exists to trace it in the document order process from the receipt of the order to the entry of the proof-of-shipment. However, some tools exist to resolve complaints, such as the computer listing of the AD numbers of all TRs that have not been shipped within 10 days of the request. In most cases those TRs are ones that require conversion from microfilm to microfiche.

For TR orders that the user does not receive and that cannot be located, a reorder is submitted. If an incorrect TR is shipped, the correct one is ordered. A memo must then be sent to NTIS directing it to delete the billing for the incorrect order. If the incorrect TR is Secret or Confidential it must be certified as destroyed by the recipient, or returned and the appropriate paperwork processed.

Resolutions of other complaints are numerous and varied. The Reference Section maintains a summary record of complaints, and it is forwarded to the Office of Policy, Plans, and Resource Management.

Release Limited Documents

A central aspect of all DTIC operations that differentiates it from other information centers is that it deals with classified and limited documents. Classified information can be made available only to Government organizations and contractors who have the appropriate level of security clearance, contract clearance (contractors only), and a clearly defined need for the information. This need is controlled at DTIC by use of the fields and groups categories.

Certain unclassified documents have restrictions to meet export control requirements. Those TRs cannot be made available to contractors who are not certified by DLSC. All DTIC users must be certified with DLSC, and the certification must be forwarded to DTIC or they will be restricted to unclassified/ unlimited documents.

Further restrictions may be placed on access to TRs. TRs with "limited distribution" contain information from the controlling activity indicating that DTIC may disseminate the TR only to a subset of users. Distribution of TRs may be limited because they contain proprietary information, military critical technology, test and evaluation data, or software information, or it can be limited for administrative or operational purposes.

To obtain a TR that is restricted, the user must meet all restrictions. At the time they place the order, users should know whether they satisfy the classification and export control requirements. If they fail to satisfy them, they may not obtain the document through DTIC. However, a user who does not meet limitation restrictions may still obtain the document by submitting a DTIC Form 55, "Request for Limited Document Form," to DTIC.

Limited document orders placed via DROLS will generate the DTIC Form 55 at DTIC. For other types of orders, the DTIC Form must be completed manually and submitted to the Registration and Services Section. Upon receipt of a DTIC Form 55, that Section validates the user's status by displaying selected MUAC data online via the DTIC Form 55 prevalidation file. If the user's status is acceptable, the TR data as described on the DTIC Form 55 is verified with a listing from the TR database. If any part of the form is unacceptable, it is returned to the user and a copy is filed for possible questions from the user.

Acceptable requests for limited documents are filed at the end of the day in user code order and assigned a control number. On the following day the DTIC Forms are pulled. One copy is filed in a suspense file in control number order and the original "white" copy is mailed to the releasing agency for approval on releasing the TR to the requester.

The releasing agency may either approve, disapprove or ignore, or even deny it has the authority to approve the request. DTIC has no control over those decisions nor how promptly the releasing agency will respond. It is sometimes difficult for either DTIC or the releasing agency to identify the Office of Primary Responsibility for the TR. To assist in identifying correct releasing agencies, the Registration and Services Section maintains manual files on, and frequent telephone contact with, releasing agencies.

If the DTIC Form 55 is not returned by the releasing agency in 90 days, the requester is notified that the order will not be filled when DTIC mails a copy of the DTIC Form held in the suspense file. If the releasing agency returns the DTIC Form disapproving the request, the user is sent a copy of the DTIC Form noting that action. If the DTIC Form is returned approving the release, the TR order is entered into the RP system from the DTIC Form 55, and the TR is delivered in the normal manner.

All approved or disapproved DTIC Forms 55 are submitted to the Production Control Branch and the AD number, contract number, user code, and control number are entered into the RP order history file. The returned DTIC Forms are kept for 2 years.

Deliver Demand Bibliographies and Management Reports

Demand TR Bibliographies and management reports may be obtained by registered users in one of two ways. The user with a DROLS terminal may enter the query and review the output on the terminal. Users who wish to have the output printed may enter the appropriate commands, and the report is printed overnight at DTIC. The next morning the Production Control Branch mails the unclassified output. If the bibliography or report contains classified items, that fact is noted on the printout and it is forwarded to the Receiving and Distribution Branch for classified mailing. A summary of all bibliographies and reports that did not run are printed and delivered to the Management Support Office of the Directorate of Telecommunications and ADP Systems. That Office contacts the user and reviews any problems that prevented the results from being printed.

Users who do not have access to a terminal may obtain their bibliography or report by contacting the Retrieval Analysis Branch in person, by using DTIC Form 64, a letter, or as is done most frequently, by telephone. The Retrieval Analysis Branch has three team leaders to oversee retrieval processing. One is responsible for searches of reports from the management databases, one for the bibliographies from the TR database, and the third for the ATI/TIP card catalog files. Written retrieval requests and telephone retrieval requests, which may be accepted by any analyst, are given to the appropriate team leader. Team leaders coordinate the assignment of searches to the analysts based on the analysts' subject expertise and workload. On these teams, the analysts accept assignments from all of the team leaders.

The analyst formulates a search strategy and executes it on a terminal. For searches of the management databases, the analyst may also specify an output format including sort sequence (the TR database has only one output format available). The results are printed overnight and reviewed the next morning. The team leader may review the results that are logged as complete and forward them to the Distribution Branch for mailing. The user may also request the bibliography or report on magnetic tape, in which case the search is rerun as a job that will produce the tape. Users not requiring a full citation but only AD numbers may request a Direct Response Bibliography. This is treated as a normal search except the analyst will provide the retrieved AD numbers to the user by telephone within 24 hours. Searches of the ATI/TIP card catalogs are done manually by the analyst and the AD number that meet the query requirements are noted. A clerk then pulls, photocopies, and returns the cards to the files. This copy is mailed to the user. (ATI/TIP searches are TR searches of older documents.)

Users may also come to the DTIC office and work directly with a retrieval analyst. Although that procedure is common in field offices, it is rare at DTIC headquarters. In such cases, the user and the analyst perform the query together. The user can then review the results on the screen. The user and analyst may refine the search as much as desired. Once successful results are obtained, the output (if small) can be printed from the screen or on a normal overnight computer print run.

In FY85, the Retrieval Analysis Branch performed more than 12,200 searches. Nearly 6,900 were for bibliographies from the TR database, while the remainder were for reports from the management databases.

Maintain Defense Research, Development, Test, and Evaluation On Line System and Databases

Each of DTIC's four databases (TR, WUIS, PS, IR&D) is available for online searching by users on a nationwide basis through DROLS. It provides access to

DTIC's databases through a fully interactive series of commands that allow the user to search using traditional Boolean logic (and/or) commands and to display and print the results. DROLS is available from 0800 until 1930 Eastern Standard Time. Registered DTIC users must register separately for access to DROLS. Users may access DROLS by telephone (direct or through TYMNET) or in a dedicated mode, and that access can be attained either in a classified or unclassified mode. Classified access adds considerably to the expense borne by the user since it requires a dedicated line, encryption devices, and TEMPEST-configured equipment. At the end of FY85, the system accessed 843 DROLS terminals across the United States for some 800,000 queries, of which 69 percent were by external users.

Unlike other processes described in this section, maintaining the databases has no start or end point; rather, it is a diverse series of ongoing activities which include:

- Physically updating and maintaining the records from a data processing viewpoint
- Maintaining and enhancing the DROLS and associated software
- Maintaining the telecommunications and security network, including maintaining internal equipment and assisting users
- Training users and providing assistance
- Maintaining usage data for billing and security.

Most of these processes are described in this chapter; discussion here centers on the actual update of the databases. The TR database is updated every 2 weeks with the data described in the Store TRs process group. The management databases are updated weekly with data described in the Store Management Information process group (weekly for WUIS and generally biweekly for IR&D). The database updates involve accepting the new transaction data (adds, changes, or deletes) and applying them through a series of computer programs to update both master (direct) files and the inverted (searchable) files. In the case of the TR database, an average of approx-

imately 2,500 records are updated weekly. This work is performed by the Operations Branch upon release of the updating transaction data by the Directorate of Database Services. Newly updated databases are normally available to users on Monday morning. If problems in the updating occur, the Systems Design and Development Division is contacted for assistance.

Disseminate Scientific And Technical Information Products Process Group

This section describes three processes that DTIC uses to generate products from its STI collection and mail them to users on a regularly recurring basis. A fourth process – Print STI and Other Material – describes the operation of the Printing Branch. Figure 3-11 summarizes the functions of these processes.

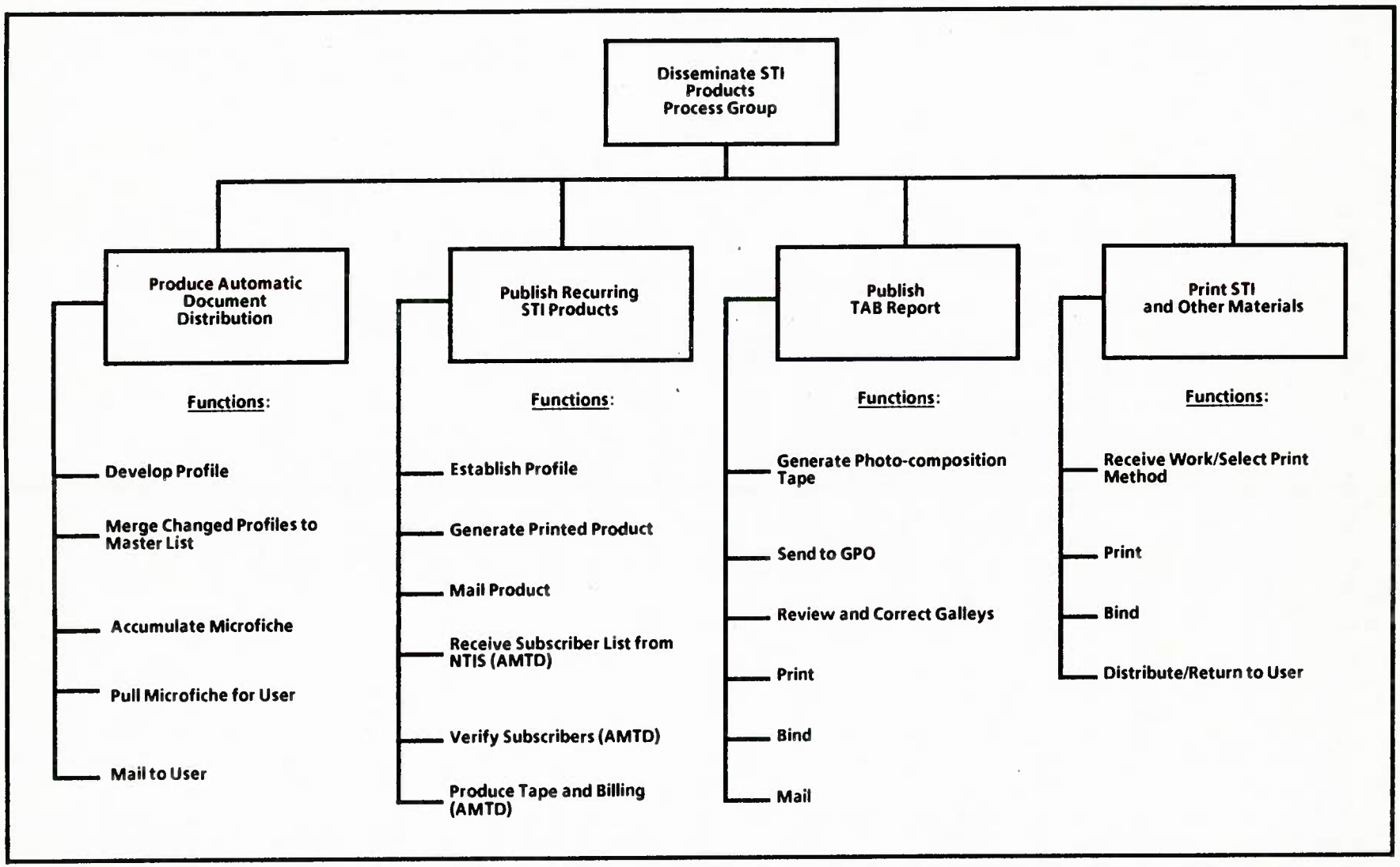
Produce Automatic Document Distribution

Through this process, DTIC distributes microfiche of newly received TRs to users based on matching the content of the TR to a pre-established profile of the user's need. The process consists of two separate parts, establishing the user profile and disseminating the microfiche based on the profile. Currently, the ADD program has 220 users who have established 350 profiles and have received 800,000 microfiche in FY85.

A user enrolls in the ADD program through the Retrieval Analysis Branch by submitting a DTIC Form 64, a letter, or a telephone call. Generally, the profile is based on subject terms – either DRIT terms, fields and groups, or uncontrolled terms. However, it can also include personal or corporate authors or other fields in the database.

The ADD team leader assigns the request to a retrieval analyst who translates it into a specific query. Once satisfied with the query, the analyst saves it in a temporary file, which is merged into the master file of ADD profiles every 2 weeks. ADD queries are checked for language syntax, and errors are reported in a listing.

FIGURE 3-11. DISSEMINATE STI PRODUCTS PROCESS GROUP FUNCTIONS



However, the query cannot be tested online and modifications are determined by user feedback.

After reviewing the results of the profile based on the TRs they receive, users may have their profiles modified. The Retrieval Analysis Branch dedicates much of its time to profile modification. Unlike some other DTIC recurring products, ADD users are not required to recertify their profiles every year.

The second part of the process is the dissemination of the microfiche, a process that directly follows the Store TRs process group. As new TRs are microfilmed by the Master Microform Processing Branch, the master copies are given to the Microfiche Maintenance and Reproduction Branch where they are held until the Branch receives the computer listing indicating the number of copies to be run. The TRs in an ADD run are the same as those in a TAB cycle. When all the citations within a given TAB run are satisfactorily entered into the computer, a job is run that compares the citations with the user profiles. This run generates two listings indicating the number of microfiche copies needed that go to the Microfiche Maintenance and Reproduction Branch.

The first listing indicates the number of copies of each TR that has to be produced to satisfy ADD needs. The microfiche are reproduced on a Microfiche copier/collator. The microfiche are then placed in trays in AD number order. The second computer listing is then used to pull the appropriate AD numbers by user, and all the microfiche for a user is then sealed and mailed. Mailing labels are also generated by the computer. Included in the reproduction is a working copy, a disaster storage copy, and a copy for NTIS (if the TR is unclassified/unlimited, the NTIS copy is incorporated as a part of the actual ADD run). The master copy is then placed in the storage vault and the working copy in the storage cabinets.

In some cases not all the TRs are microfiched in time for the next ADD run. Those omissions are noted in a memo to the ADD program coordinator and the omitted TRs are included in the next ADD run.

An ADD run occurs every 2 weeks in conjunction with a TAB cycle. While most of the production activity for ADD is performed in the Retrieval Analysis or the Microfiche Maintenance and Reproduction Branches, program coordination is provided by the Reference Services Branch. The program coordinator is responsible for ADD production procedures and guidelines for distribution and also resolves major complaints and authorizes release of DTIC's billing transactions to NTIS.

Publish Recurring Products

DTIC produces four recurring products announcing the receipt of new STI data. The CAB contains citations of newly received TRs; the AMTD program distributes new TR citations on magnetic tape; and Recurring Reports summarize new or revised WUIS or IR&D records. The fourth product, the TAB, is described in the next section. For CAB and Recurring Reports the production process parallels the ADD program in that the user establishes a profile that is periodically matched against updates of the databases and results produced on a cyclic basis.

CAB profiles are established by the user who contacts the Retrieval Analysis Branch by telephone or letter. An analyst enters the profile on the computer and when satisfied with its completeness, saves it in a temporary file that is merged to the master file of profiles. As with the ADD process, syntax errors are printed but the query cannot be tested online. However, users may modify their profiles as frequently as they wish. There are 480 CAB users and 2,400 profiles. Users recertify their profiles each year; they receive recertification forms in January and unless they return the forms within 60 days, their profiles are canceled.

Once the Database Support Branch has approved the release of the citations and the Retrieval Analysis Branch has approved the new/modified updated master

profile file, computer jobs are run with each TAB cycle which match the profiles against the new TR citations and CAB bibliographies are printed. The user address is printed on the bibliographies so the Production Control Branch may place CABs (which are always unclassified) directly in mail bags.

Establishing user profiles for Recurring Reports from the management databases follow the same procedures. However, the user has more flexibility in the report format and the run cycle. The reports may be printed and sorted in more than 600 formats, and new ones may be requested through the Directorate of Telecommunications and ADP Systems (the TR database has only one format and is always in AD number order). Recurring Reports may be run monthly, quarterly, semiannually, or annually. The 360 Recurring Report users have 1,000 profiles. Recurring Reports are delivered to the Retrieval Analysis Branch and reviewed before being forwarded to the Receiving and Distribution Branch for mailing.

The AMTD program does not operate from a user profile. It releases all announceable, newly received TR citations in the TAB and unclassified/unlimited documents. NTIS maintains a list of prepaid AMTD users and with each TAB cycle sends an address list of those users to the Reference Services Branch. There, user codes are appended and the list is forwarded to the Directorate of Telecommunications and ADP Systems where tapes are generated and mailed to the user. That Directorate also forwards billing notification to NTIS. Seven users participate in the AMTD program including the British, Canadian, and Australian Embassies.

Publish Technical Abstract Bulletin Report

The TAB is a biweekly publication of newly accessioned TRs that contains portions of complete document citations, including the abstract (arranged by fields and groups but including DRIT descriptors in the citation), and several indexes such as personal author and subject. It announces only a subset of DTIC's incoming TRs because unclassified/unlimited documents are announced by NTIS. It also excludes

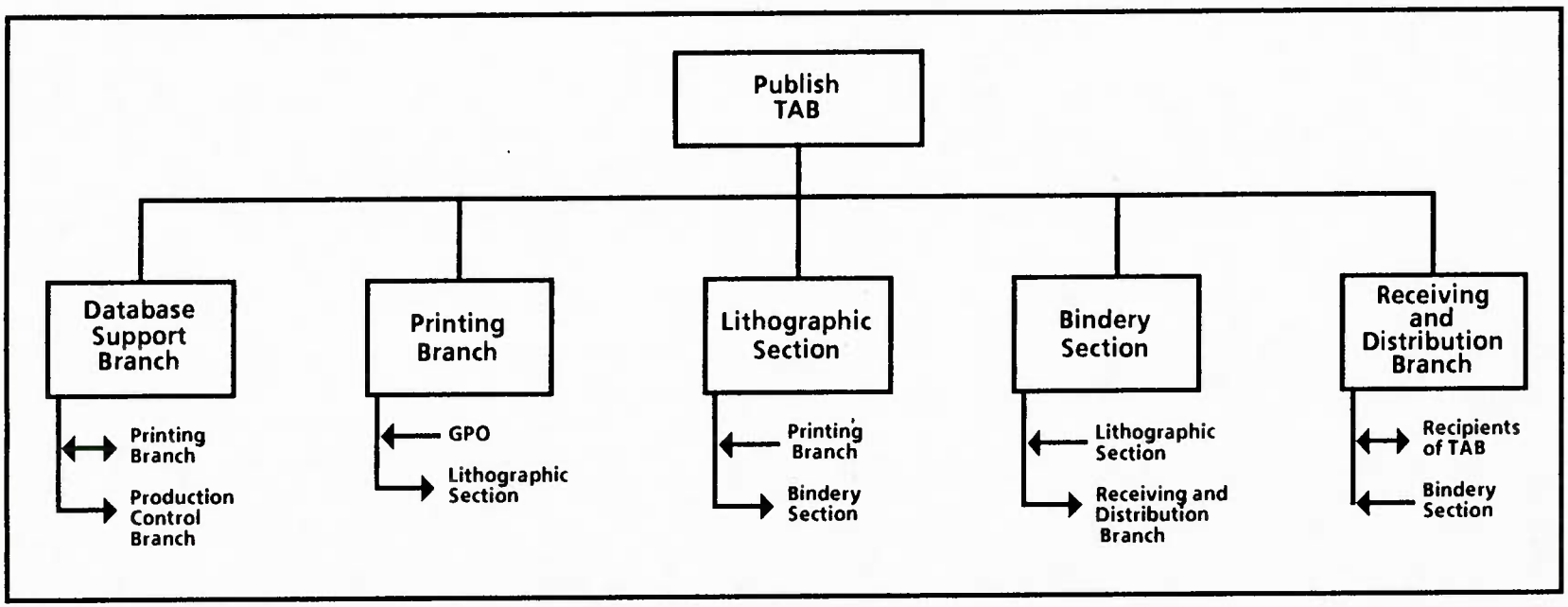
other documents such as those that are more than 10 years old or that deal with sensitive subjects. It is available to any user with the appropriate clearance level. In FY85 nearly 12,000 documents were announced in the TAB.

The TAB is published on a biweekly basis and its publication involves five DTIC organizations (see Figure 3-12). The TAB publication is presented here as distinct from the Store TRs process group because they are discrete functions. However, DTIC views the entire flow of TRs from receipt in the mail room through the mailing of a TAB as one continuous operation coordinated on a master schedule. The master schedule indicates specific dates that specific functions should be performed for specific TABs.

During the Store TRs processes the AD numbers that will comprise a TAB are determined. This determination is important because the computer software assumes that a TAB set will include sequential AD numbers without gaps. Hence, once the AD numbers for a TAB are determined, all TRs within the range must be processed or none can be. The conclusion of the Store TRs processes occurs when the Database Support Branch releases the citations for further processing. This release triggers the TAB publication process, the TR database update, and the production of the ADD, CAB, and AMTD products (CAB and ADD productions also require that the profiles be updated).

When the citation is released, the Production Control Branch schedules the computer job to produce a photocomposition tape of the TAB product. That tape is sent to the GPO which produces the galley proofs and negatives and sends those to the Printing Branch. The galley proofs are then sent to the Database Support Branch to proofread, and the marked copies are sent to the Lithographic Section. (Corrections to any data that would appear on a microfiche header are sent to the Master Microform Processing Branch for corrections to the microfiche).

FIGURE 3-12. PUBLISH TAB PROCESS PARTICIPANTS



The Lithographic Section incorporates the changes by a variety of cut and paste methods. The worst case would result in retyping and photographing an entire page. The modified negatives are converted to metal plates (which produce the best quality print available to DTIC) and printed. When printing is complete the TABs are forwarded to the Bindery Section. There the four-up pages are folded, collated, and bound. The operation is completed by forwarding the TAB to the Receiving and Distribution Branch where it is wrapped, logged in accordance with requirements for classified material, and mailed.

Print Scientific and Technical Information and Other Materials

The Printing Branch reproduces printed material. The Printing Branch accepts printing requests from any DTIC organization and a number of DLA organizations. Three basic types of work come to the organization: the monthly TAB product; demand orders of TRs that require more copies than the Paper Copy Processing Branch can efficiently produce (20 copies); and "as needed" requests from other DLA or DTIC organizations, which are mostly random in type, timing, and volume and cannot be reasonably anticipated by the Branch.

The Printing Branch accepts work accompanied by a DD Form 843 (DTIC) or DD Form 844 (DLA). The Branch passes the work to the Lithographic Section with or without recommendations on how it should be printed. The principal printing decision is the type of plate to be used. A metal plate produces the best quality product, is the most durable, and should be used when a large number of high-quality copies is required. It is also more expensive and time-consuming to use than the polyester plate or the paper plate (both of which produce lower quality copies). Standard photocopy reproduction is also available. The Lithographic Section reviews the request and selects a printing method based on considerations including quality/quantity requirements, existing workloads, and manpower availability.

Other considerations such as paper size and one- or two-sided copying can also affect the selection of a printing method.

If a metal plate is used, a photographic negative is produced on special film and chemically impressed onto the metal plate. The resulting plate can then be used to produce the printed copies on an offset press. Paper plates are used on the newer presses including the Total Copy System which accepts an original and automatically produces the plate and the copies. Paper plates are produced by feeding the original into a duplicating machine which produces an electrostatic paper copy. The paper plates are used on six offset presses.

The pages can be printed one-side only, two-sided or "four-up" which is two-sided and two separate pages that are folded over. This later printing requires great care in organizing the work. (Note: the TAB is printed four-up.) Once the pages are printed they are stacked and moved to the Bindery Section.

The Bindery Section places the printed pages on collators that merge the stacks of separate pages into sets of complete publications. Depending on the length of the document this may require several passes. Four-up documents require extra processing (folding). Once collated, the documents are bound either by power stapling, using power punches and Acco clips, or by tape and glue binding.

Once bound, the Bindery Section forwards the documents either to the Receiving and Distribution Branch for mailing or returns them to the Printing Branch to send to the requester. An exception to this procedure occurs when the Bindery Section binds demand document orders for SBIR (independent of the Lithographic Section) and returns them to the SBIR Team. The Bindery Section returns the DTIC Form 843/844 that has accompanied the work to the Printing Branch, which notifies the user that the work is complete.

The Printing Branch has graphics equipment that is obsolete and, for the most part, out of service. DLA policy requires that DTIC graphics work be submitted to

the Printing Branch, which, in turn, forwards it to DLA for printing. DLA typically requires several weeks to return the work. Consequently, the Printing Branch completes the DTIC work that it still can, but much of the DTIC work is done on microcomputers in other DTIC organizations.

Maintain Scientific And Technical Information Tools And Aids Process Group

This section describes the processes involved in developing and maintaining information that is used both as aids to the DTIC staff in performing other work and as products. Figure 3-13 summarizes the functions of these processes.

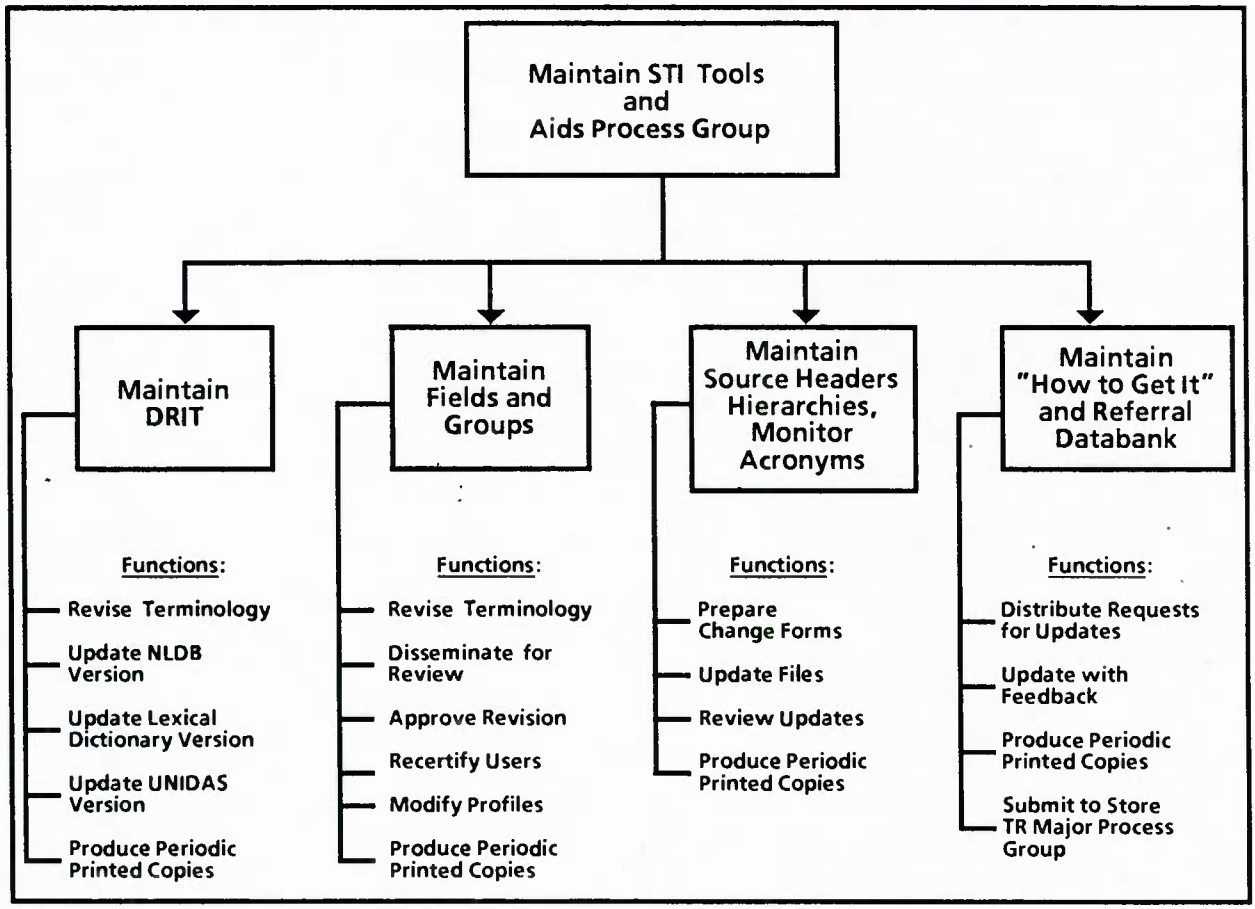
Maintain the Defense Technical Information Center Retrieval Indexing Terminology

The DRIT is a fully hierarchical thesaurus of subject terms developed by DTIC to provide subject access to its database records. It consists of more than 13,000 posting terms that can be applied to TR, WUIS, and IR&D data. Maintenance of the DRIT is the responsibility of the Special Analysis Branch, which is also responsible for assigning DRIT posting terms to the data.

Since the subject areas of DoD R&D change and evolve, the DRIT must evolve with them. Anyone may suggest changes to the DRIT. The Special Analysis Branch will collect the proposed changes and periodically circulate them for review and comment among the appropriate DTIC staff. When a consensus is reached, the DRIT is updated.

Currently three computerized versions of the DRIT exist, and each must be updated in the event of any change in the DRIT terminology. The first version is the Natural Language Data Base (NLDB). Although it was used in an earlier version of the MAI, it is currently used only as an authority and control file for the DROLS hierarchy file. The NLDB is maintained through batch programs and listings. To

FIGURE 3-13. MAINTAIN STI TOOLS AND AIDS PROCESS GROUP FUNCTIONS



update this file, the Special Analysis Branch submits keypunch forms to the Production Control Branch.

The second version of the DRIT is being developed on the UNIDAS software system. That version contains cross references, scope notes, and other information and is to be used for the published version of the DRIT. The third form is the lexical dictionary within the MAI programs. While this version is not a complete thesaurus form (with notes, cross-references, etc.), it does contain a complete list of DRIT posting terms.

Aside from the computer files, the DRIT is released in book form to DTIC employees, SBIN participants, and any user who wishes to retrieve subjects from DROLS. The DRIT, last published in 1979, is scheduled to be released in its improved form from the UNIDAS files in 1986.

Maintain Fields and Groups

The fields and groups represent broad areas of subject discipline. For example, Field 07 is "Chemistry." It is subdivided into six groups of which 03 is "Organic Chemistry." There are 25 fields and 251 groups.

The use of fields and groups is an important element in DTIC's ability to control the release of documents. When a user is registered, the subject areas for which he has a "need to know" are determined by the fields and groups assigned to him. In the case of a contractor, the contractor suggests the fields and groups to be used and the Government project monitor approves them. This information is entered into the MUAC file.

Every citation for a TR, WUIS, IR&D, and RD-5 document is assigned a set of fields and groups during the Store TRs and Store Management Information processes (WUIS and IR&D contributors apply the fields and groups themselves). The computer programs that process document orders, ADD, and other similar products perform a complex comparison of the users classification status, organization type

(DoD, Government, contractor, etc.), and allowed fields and groups with the document's classification, limitations, and fields and groups. From this comparison a decision to release the document or to reject the request will be made.

Because the fields and groups are tied into so many of DTIC's products, they are rarely updated. The Directorate of Database Services is in the process of completing the first update in nearly 20 years. The fields and groups are maintained on a file on DTIC ADPE Time-Sharing Service (DTSS). The Directorate of Telecommunications and ADP Systems is developing programs to convert all records in the databases from the current to the new set of fields and groups. However, before this conversion can be implemented, the Registration Section must convert all users' registrations to include the new fields and groups. That registration conversion is scheduled to be completed by the end of 1986. Additionally, the Retrieval Analysis Branch must update CAB and ADD profiles that utilize fields and groups.

Maintain Source Headers, Hierarchy, and Monitor Acronyms

The source header and monitor acronyms are authority files used by the databases. A six digit code is assigned to every organization that submits or monitors documents sent to DTIC. For example, the Oklahoma State University Stillwater College of Engineering is "391931." Catalogers use the code when they enter the record via RTIS. Codes are then used rather than words for searching. When products are printed, the computer translates the code to the full name of the source or monitoring organization.

The source hierarchy file contains hierarchical and historical data about all of the organizations known to DTIC. For example, in the DoD hierarchy, DTIC would be found under DLA. The hierarchy also indicates that DTIC was once known as the Defense Documentation Center (DDC). That file also contains codes for each organization, suborganization, and previous name. It is not directly used in cataloging, but DROLS permits retrieval by the codes in a hierarchical manner. Thus, a retriever

could search an organization by either its current or past names or both. Similarly, one could retrieve an organization or include all its suborganizations. The source hierarchy in printed form also serves as a reference tool.

These files are maintained by the Bibliographic Database Branch. They are maintained as follows. To establish the new header, a specialist first researches reference materials to identify the source and then completes a "Corporate Author Update" (DTIC Form 242). This DTIC Form identifies the new source along with its source code, sort code, and geopolitical code. Information on DTIC Forms 242 are forwarded to the Production Control Branch for keypunching every 2 days, and the header file is updated on the computer. The computer generates a transaction listing for review by the specialist who created the source header and code. A 3x5 card is also prepared and filed. On the average, 15-20 new or modified headers are added every 2 days. Every 6 months, a complete alphabetical list of source headers is printed for DTIC use. A similar list is also generated for external users once every year.

Once the new source header is established, it is placed in the hierarchy of organizations. When information about the source is received, various reference tools are checked to determine the hierarchical position of the organization. When that position is determined, the specialist updates the hierarchy by using a numerical listing containing all sources in hierarchical order.

The specialist then fills out an "EAM Transcript Transmittal" (DSC Form 24) with the commands to locate, change, or delete the header. The forms are keypunched by the Production Control Branch and reviewed by the specialist. If the cards are correct, the update is run and a new list is printed for review by the specialist. The cycle is repeated until the hierarchy is accurate. Because of the complexity of the file updating, several iterations are often required. Upon request, the system also produces a lengthy alphabetic printout of the hierarchy.

The Branch is also responsible for maintaining a Government monitor acronym file, which is updated through a similar batch-oriented process.

Maintain "How to Get It" and Referral Databank

The Referral Databank provides access to Government sources of STI; and "How to Get It" is a directory of how to get Defense-related information. The latter provides the sources of various documents and other information media, e.g., that the "Scientific and Technical Aerospace Reports" Bulletin can be obtained from the NASA Scientific and Technical Information Facility, and provides address and order information. Both of these documents are published approximately every 2 years. Both are managed and maintained by the Reference Services Branch.

The "How to Get It" update is planned for late 1986. Updating requires that forms be sent to all the current sources, and newly identified ones be solicited to verify or obtain the current status of their information. The returned forms are entered into an IBM PC-XT and edited. The report (approximately 500 pages long) is given to the Bibliographic Database Branch to begin input into the TR database. A copy also goes to the Printing Branch for reproduction.

The Referral Databank is both a report and a special portion of the TR database that cannot be displayed online. It is a directory of approximately 470 Government sources of STI. DTIC solicits new sources to participate; they are then selected, cataloged, indexed, entered, and updated using the RTIS TR update programs. The Reference Services Branch provides the data to the Database Support Branch, which enters the data and returns the listings to the Reference Services Branch. To produce the document, the items are copied from the TR database into the BASIS database system, manipulated into the proper format, and the printed report is generated. Distribution is handled in the same way as the "How to Get It." The Referral Databank was last updated in 1984 and is scheduled to be released again in

1987. Depending on the success with the use of the PC for "How to Get It," the use of the PC is tentatively planned for the next release of the Referral Databank.

Provide Specialized Scientific And Technical Information Support Systems Process Group

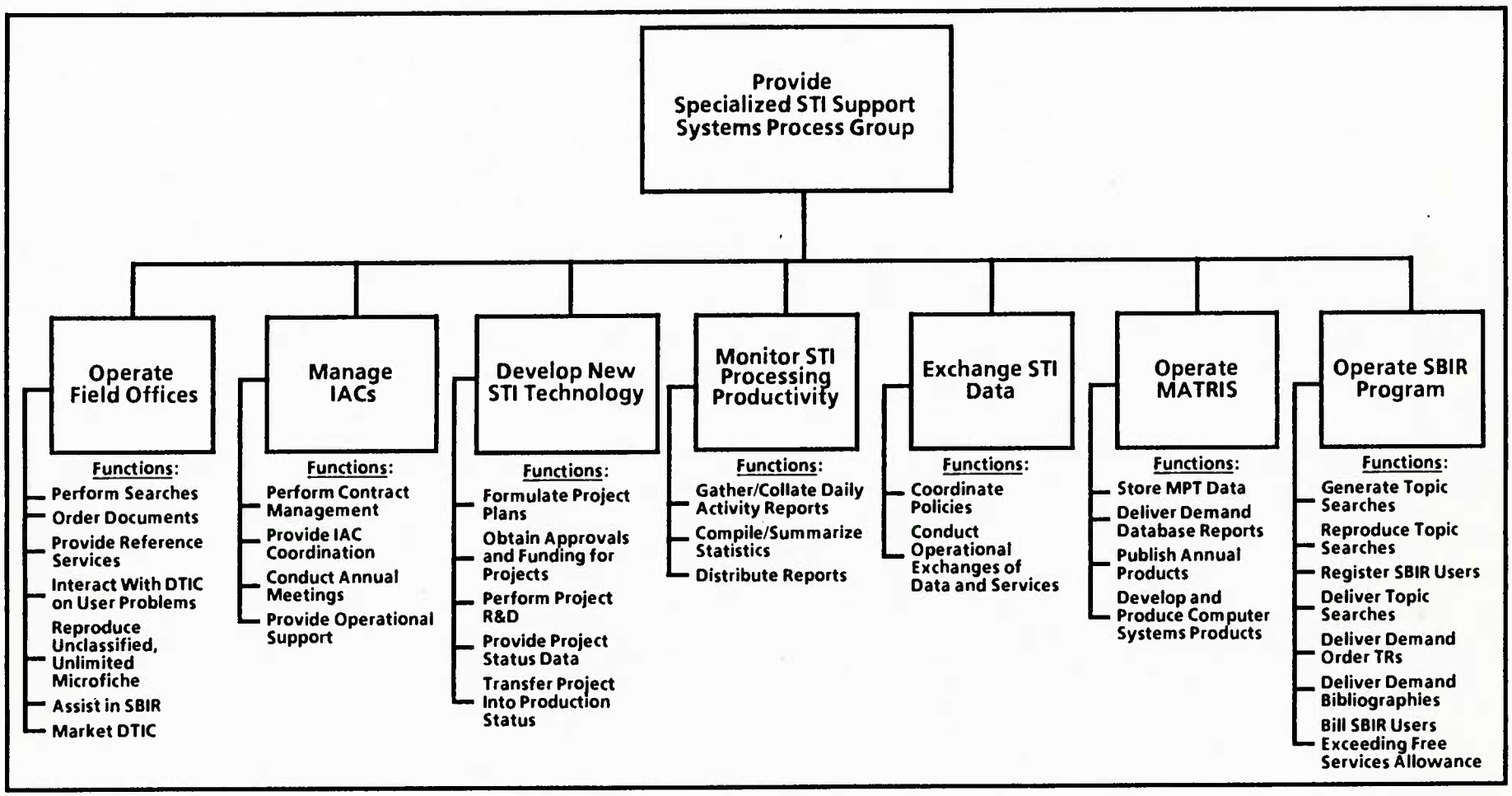
This process group consists of several specialized support systems that do not readily fit into any other category. For the most part they provide products and services in specialized areas. For example, MATRIS provides services within the subject area of manpower, personnel, and training. The SBIR program's area is serving small businesses. Additionally, this process group includes the operation of the field offices, IACs (to the extent of their dealings with DTIC), and the Office of Information Systems and Technology. The functions of these processes are summarized in Figure 3-14.

Operate Field Offices

The field offices in Los Angeles, California and Boston, Massachusetts perform a variety of functions including online searching, document ordering, reference services, problem resolution, microfilm reproduction, SBIR support, and public relations. Because their operations are heavily driven by user demand and are nonroutine, the field office activities are described through an overview of their more frequent activities.

The highest priority for both field offices is providing online searching for users who do not have access to a DROLS terminal. The Los Angeles, California office statistics indicate that it performs an average of 260 searches a month, with many more not recorded because of the press of time. The Boston, Massachusetts office averages approximately 600 searches a month. Both offices perform searches based on telephone requests or personal visits. Visitors (averaging one a day) are encouraged, because the direct client contact improves the search results.

FIGURE 3-14. PROVIDE SPECIALIZED STI SUPPORT SYSTEMS PROCESS GROUP FUNCTIONS



Providing general reference assistance (answering questions) is second in priority and perhaps highest in time expended. Both offices receive an average of 40 telephone calls a day. The requests run the gamut of general information requests, ranging from, "What is DTIC?" to detailed questions such as certification procedures to meet export control requirements. The questions are answered, either by the staff immediately or by checking with DTIC headquarters.

Both field offices perform online document ordering of specific TRs in response to telephone or written requests from local users. The Los Angeles, California office orders more than 500 documents a month and the Boston, Massachusetts office averages 330. Both field offices consider this activity a low priority since it is a service the user could easily obtain directly through DTIC headquarters. In some cases, these requests are referred to DTIC headquarters when they are lengthy or the field office workload is heavy.

Neither field office frequently reproduces microfiche from its own collection of unclassified/unlimited TRs; Los Angeles, California averages about four a day and Boston, Massachusetts about one a month.

Each year the Boston, Massachusetts office expends significant time on SBIR-related activities that include promotional activities, answering registration questions, and conducting searches.

Both offices are committed to responding quickly to incoming requests. This leaves less time than desired for initiating marketing and public relations. These activities are also restricted by the travel budget, although both offices brief local organizations and meetings on DTIC, and assist in local DROLS training and query formulation.

Manage Information Analysis Centers

DTIC's relationship with the DoD IACs consist of providing direct contract management of many of the IACs, and general coordination and operational support to all IACs. These activities were summarized in Figure 3-14.

DTIC administratively manages and funds 11 of the 21 IACs and is in the process of adding three new ones. Part of DTIC's responsibilities include developing the RFP for any new IAC, and either extending or recompeting contracts of those contractors who have completed their current term of managing a given IAC. DTIC is also responsible for other aspects of contract management such as budget review and ensuring that required deliverables are produced. DTIC assists DoD Components sponsoring proposals for new IACs.

For all the IACs, DTIC provides general support through arranging for joint IAC publicity, briefing the IAC program concept, and organizing an annual IAC conference. DTIC releases an IAC Directory that provides information on all the IACs.

DTIC provides operational support to the IACs in several ways. For DTIC-sponsored IACs, it provides as Government Furnished Equipment (GFE), a terminal to access DROLS and specialized ADP software. All other IACs are granted access to DROLS. The Office of User Services offers regular DROLS training to IACs and has a special input training course for IACs.

In addition to normal access to DROLS retrieval, the IACs have remote input access into the TR database. DTIC provides additional fields for IACs including a field for specialized subject terms and a holdings symbol field to indicate which IAC physically holds the TR. This capability allows IACs to use DROLS for online searching of their own collection, as well as that of DTIC. Seven of the IACs currently make use of this capability. DTIC releases an annual index of the IAC subject terms to the IACs. IACs may also receive on-demand citations (equivalent of

a demand bibliography) of their own TRs. This product is called Document Abstract Bulletin (DAB) and is ordered online via DROLS.

IACs are registered DTIC users and are, therefore, also eligible for any other DTIC service such as participation in CAB and ADD.

Develop New Scientific and Technical Information Technology

Within DTIC's mission statement is the responsibility to:

> Function as a central activity within the Department of Defense for applying advanced techniques and technology to DoD STI systems and for developing improvements in services and STI transfer effectiveness in support of STIP objectives.

The Office of Information Systems and Technology is the DTIC focal point for carrying out this mission responsibility. Additionally, the Office assists other DTIC organizations in developing and applying technology. Finally, the Office acts as an intermediary between other DTIC organizations and the Directorate of Telecommunications and ADP Systems in analyzing requests for ADP-oriented services.

The Office of Information Systems and Technology performs primarily project-oriented work, i.e., work that has a defined starting and ending point and that has goals, methodologies, and procedures that may vary from one project to another. Their functions were summarized in Figure 3-14.

Projects are initiated by external DoD organizations, DTIC organizations, or the Office. Projects vary in size and scope, from a few person months to several years with both DTIC staff and contractor support. A few of the larger projects that illustrate the type of work being undertaken are shown below.

- The Defense Gateway Information System (DGIS). This is the largest, currently active, new STI technology project. It is intended to improve users' abilities to access remote databases and provide the ability to manipulate bibliographic citations retrieved from them. This project is representative of the type of project that addresses the DoD-wide interest in STI technology.

- Two-Sided Microfiche Printer. This project represents the second type, one for which direct assistance is provided to a DTIC organization, in this case

the Micrographics Division, to develop an enhancement and replacement of the 970 microfiche-to-paper copy reproducers.

- Local Automation Model. This project supports both general and specific information applications. Its goal is to develop a standardized but flexible set of software and hardware for DoD related libraries to perform cataloging, retrieval, and other functions for their own collections. Additionally, it allows the libraries to conveniently transfer those data to DTIC and to access the DTIC databases.

- Replacement Input System. This project is intended to assist the Acquisition and Selection Branch and the Directorate of Database Services to replace older, and primarily batch software with newer interactive software that will improve production times and productivity in those organizations.

Once a project is suggested, it must be submitted to DTIC management for approval. In most cases projects are also incorporated into the DTIC tactical plans. Once the project is approved, the critical issue of allocation of resources must be addressed. Resources include employees' time and frequently the acquisition of equipment, contractor services, or both. Fund allocations are more difficult to obtain than project approval. In the DTIC tactical plan a number of projects are approved, but inactive, because either funding or staff resources are not available. No set process exists for obtaining funding approval or for setting priorities for the various projects. Funding can be obtained from external sources, and that type of funding has been a significant factor for several projects.

Project management techniques are primarily manual and left to the discretion of the individual project managers. Regular briefings of the Division managers and participation in DTIC's Management by Objective (MBO) program are the primary project control tools. Project status is usually communicated to DTIC management and users through formal and informal briefings.

Project completion usually entails transferring the operational system to a DTIC organization that performs production work or to an external DoD organization. If the project deals with a data-processing-related system, it is turned over to the Directorate of Telecommunications and ADP Systems for maintenance support.

Activities involving ADP assistance at the request of other DTIC organizations are initiated by submitting a DTIC Form 372 to this Office. An Office staff member meets with the requester and evaluates the request. The DTIC Form 372 is forwarded to the Directorate of Telecommunications and ADP Systems for final analysis and implementation. The extent of the Office's involvement in supporting ADP requests has varied significantly over time. It has consisted of extensive involvement with detailed analysis and approval authority and, at the other extreme, simply initialing a form and passing it on. Currently, little analysis is performed.

The Office performs limited programming, now focused on PC applications. Historically, programming activities have included such projects as implementing the AQ on the Sperry 1100/61 computer, and the Office was responsible for the DTSS time-sharing system.

Monitor Scientific and Technical Information Processing Productivity

There are four daily management reports and a monthly publication called Summary Management Data Report (SMDR) that provide information describing DTIC's productivity. Table 3-1 lists the sources of productivity data, the organization responsible for reporting that productivity data, and the summary management report that this productivity data is utilized for. Table 3-2 lists the four daily summary reports, as well as the monthly reports, that appear in the SMDR.

The Office of Policy, Plans, and Resource Management receives the productivity data from forms, memos, or by telephone. With the exception of the ADP reports, this data is manually recorded by the DTIC production staff as they perform their work. The information is summarized at the branch or section level and forwarded to the Office of Policy, Plans, and Resource Management [individuals also record and track productivity through the submission of labor exception reports .

TABLE 3-1. SOURCES OF PRODUCTIVITY DATA FOR MANAGEMENT REPORTS

SOURCE OF DATA		OPI [1]	NAME OF REPORT[2]
Form	Title		
DTIC 33A and B	Receiving and Distribution Branch Daily Activity Report	FDS	Daily Executive Summary DTIC 40 – Demand Technical Report Daily Production
DTIC 39	Daily Activity Report – Bibliographies	HAR	DTIC 40B – Daily Production *SMDR categories:* TRs/In-House Technical Report Bibliographies; TRs/Database Retrieval
DTIC 40F	Work Unit Information System and Progress Report	HDR	SMDR:WUIS/Database Input
DTIC 54	Daily Activity Report – Data Input and Review Branch	HDS	DTIC 40A – Technical Report Input Announcement and Subscription Status
DTIC 82	Daily Activity Report – Information Analysis Branch	HAS	DTIC 40A – Technical Report Input Announcement and Subscription Status
DTIC 111	Printing Branch Daily Activity Report	FDR	Daily Executive Summary DTIC 40 – Demand Technical Daily Production
DTIC 121	Weekly Production Status Report – Subscriptions Products Branch	HAR	*SMDR categories:* TRs/ADD Subscriptions; TRs/Current Awareness Bibliographies; WUIS/Recurring Products; IR&D/Recurring Products
DTIC 209A	Reports Requested from RDT&E Databank (DD1498) – Daily Activity Report	HAR	DTIC 40B – Daily Production Report *SMDR categories:* WUIS/In-house Products Furnished; WUIS/Database Retrieval; PS/In-House Products Furnished; PS/Database Retrieval; IR&D/In-House Products Furnished; IR&D/Database Retrieval
DTIC 261	Micrographics Processing Division Daily Activity Report	FM	Daily Executive Summary DTIC 40 – Demand Technical Report Daily Production

[1] Office of Primary Interest-organization that generates the form.
[2] All reports in this column are produced by DTIC-L.

TABLE 3-1. SOURCES OF PRODUCTIVITY DATA FOR MANAGEMENT REPORTS (Continued)

SOURCE OF DATA		OPI [1]	NAME OF REPORT[2]
Form	Title		
DTIC 278	Independent R&D Databank Schedule and Progress Report	HDR	SMDR: IR&D/Database Input
DTIC 294	Daily Activity Report – Reference Services Branch	FDR	*SMDR categories:* TRs/Document Special Processing; TRs/Reference Services Requests; TRs/Demand Orders Processed
DTIC 373	Descriptive Cataloging Branch – Daily Activity Report	HDB	DTIC 40A – Technical Report Input Announcement & Subscription Status *SMDR categories:* TRs/Database Input; TRs/Average Processing Time
DTIC 387	DTIC-F TAB Daily Status Report	FDR	Daily Executive Summary
DTIC 420	User Complaints on Demand Document Orders	L	SMDR: QA – User Complaints on Demand Reports
DLA 73	Request and Approval for Overtime		Daily Executive Summary
ADP	Report by Computer Program DAA7OR – shows number of valid TRs received	Z	DTIC 40 – Demand Technical Report Daily Production
ADP	ADP Report – Detail Manhour Report	Z	SMDR: DTIC Civilian Personnel Strength
ADP	ADP Report – Cumulative Number of Users Served by DTIC-TOD for FYnn	Z	*SMDR categories:* TRs/In-House Technical Report Bibliographies; WUIS/In-House Products Furnished
ADP	Biweekly Strength Report	L	SMDR: DTIC Civilian Personnel Strength
ADP	ADP Report – Monthly Summary of Processes by Time Intervals	Z	SMDR: QA/RDT&E Online System-Responses
ADP	ADP Report – Time and Date Statistics	Z	SMDR: TRs/Demand Orders Processed

[1] Office of Primary Interest-organization that generates the form.
[2] All reports in this column are produced by DTIC-L.

TABLE 3-1. SOURCES OF PRODUCTIVITY DATA FOR MANAGEMENT REPORTS (Continued)

SOURCE OF DATA		OPI [1]	NAME OF REPORT[2]
Form	Title		
ADP	ADP Report – CRT Utilization	Z	*SMDR categories:* TRs/Database Retrieval; WUIS/Database Retrieval; PS/Database Retrieval; IR&D/Database Retrieval DROLS/Interrogations
ADP	ADP Report – R&T WUIS Database Status	Z	SMDR: WUIS/Database Input
ADP	ADP Monthly Status Report #DAA72 – Source of Orders	Z	SMDR: TRs/Demand Orders Processed
ADP	ADP Control #RMD455 – Monthly Status Report/Demand Orders Shipped and Specials	Z	SMDR:TRs/Demand Orders Processed
ADP	ADP Control #RM0500 – Technical Report Input – Source Contributors	Z	SMDR: TRs/Demand Orders Processed
ADP	ADP Control #M0060, ADP Report #PCN(BW)45	Z	*SMDR categories:* TRs/Reports Distributed; TRs/ADD Subscriptions
ADP	ADP Control #IM0080	Z	SMDR: IR&D/In-House Products Furnished
ADP	ADP Report #DAA72	Z	SMDR: TRs/Reports Distributed
Memo	Daily Memos about Equipment Status and Problems	ZOA, HD	Daily Executive Summary
Memo	Daily Morning Memo	Z,H	DTIC 40A – Technical Report Input Announcement and Subscription Status
Memo	Technical Report Changes	HD	SMDR: TRs/Database Input
Memo	Report of Selected Work Processes	HOD	*SMDR categories:* TRs/In-House Technical Report Bibliographies; TRs/STI Source Referrals – Input; WUIS/In-House Products Furnished; PS/In-House Products Furnished; IR&D/In-House Products Furnished

[1] Office of Primary Interest-organization that generates the form.
[2] All reports in this column are produced by DTIC-L.

TABLE 3-1. SOURCES OF PRODUCTIVITY DATA FOR MANAGEMENT REPORTS (Continued)

SOURCE OF DATA		OPI [1]	NAME OF REPORT[2]
Form	Title		
Memo	Processing Time in Workdays WUIS	HAR	SMDR: WUIS/In-House Products Furnished
Memo	Monthly Report of Remote Online Batch Products	HAR	*SMDR categories:* WUIS/Database Retrieval; PS/Database Retrieval; IR&D/Database Retrieval
Memo	MATRIS Usage Statistics	MATRIS	SMDR: MATRIS/Database Input and Output
IOM	"Inspection of Documents Performed by DTIC-FMQ"	F	SMDR: QA/Quality of Technical Report Input
IOM	Downtime of Sperry Computer	Z	SMDR: QA/RDT&E Online System-Reliability
Manual Report	Shows number of different categories of terminals used	Z	SMDR: DROLS/Interrogations
Manual Report	Manually kept log of number of plates and units produced	F	SMDR: Printing Plant/Production
Master Schedule	Production Schedule established jointly by DTIC PSEs	various	Daily Executive Summary
GLAC	General Ledgers – Account Codes Trial Balance	L	SMDR: DTIC Budget
Telephone	Production Completion Dates	HAR, HDS, ZOC	Daily Executive Summary
Telephone	Equipment Status/Other Problems	F	Daily Executive Summary
Telephone	Quote of Figures about Remote Retrievals	Z	SMDR: TRs/Database Retrieval
Telephone	Quote of Figures	HAR	SMDR:WUIS/Recurring Products
Telephone	Quote of Figures	B	SMDR: SBIR/Database Retrieval

[1] Office of Primary Interest-organization that generates the form.
[2] All reports in this column are produced by DTIC-L.

TABLE 3-2. PRODUCTIVITY MANAGEMENT REPORTS

REPORT NAME	SOURCE OF PRODUCTIVITY DATA
Daily Management Reports:	
Daily Executive Summary	DTIC Forms 33A, 33B, 111, 261,387
	DLA Form 73
	Daily Memo from ZOA, H
	Master Schedule
	Telephone calls from HAR, HDS, ZOC
DTIC 40 – Demand Technical Report Daily Production	DTIC Forms 33A, 33B, 111, 261, 387 ADP Report by computer program DAA7OR
DTIC 40A – Technical Report Input Announcement and Subscription Status	DTIC Forms 54, 82, 373 Morning Memo from H, Z
DTIC 40B – Daily Production	DTIC Forms 39, 111,209A,
Monthly Management Reports:	
DTIC Civilian Personnel Strength	DTIC-L Biweekly Strength Report ADP Report – Detail Manhour Report
DTIC Budget	General Ledgers – Account Codes Trial Balance
Quality of Technical Report Input	IOM – inspections of documents performed by DTIC-FMQ
User Complaints on Demand Reports	DTIC Form 420
RDT&E Online System – Reliability	IOM from Z
RDT&E Online System – Responses	ADP Report – Monthly Summary of Processes by Time Intervals
TR Database Input	DTIC 373, Memo "Technical Report Changes"
TR Average Processing Time	DTIC 377
TR Demand Orders Processed	DTIC 294, ADP Report – Time and Date Statistics, ADP Monthly Status Report #DAA72 – Source of Orders, ADP Control #RMD455 – Monthly Status Report/Demand Orders Shipped and Specials, ADP Control #RM0500 – Technical Report Input-Source Contributors
TR Reports Distributed	ADP Control #M0060, ADP Report #PCN(BW)5, ADP Report #DAA72

TABLE 3-2. PRODUCTIVITY MANAGEMENT REPORTS (Continued)

REPORT NAME	SOURCE OF PRODUCTIVITY DATA
TR ADD Subscriptions	DTIC 121, ADP Control #M0060, ADP Report #DAA72
TR Document Special Processing	DTIC 294
TR Reference Services Requests	DTIC 294
TR In-House Technical Report Bibliographies	DTIC 39, ADP Report – Cumulative Number of Users Served by DTIC-TOD for FY, Memo "Report of Selected Work Processes"
TR Current Awareness Bibliographies	DTIC 121
TR Database Retrieval	DTIC 39, ADP Report – CRT Utilization, Telephone quotes from DTIC-Z about remote retrievals
TR STI Source Referrals – Input	Memo "Report of Selected Work Processes"
TR STI Source Referrals – Referrals	Memo "Report of Selected Work Processes"
WUIS Database Input	DTIC 40F, ADP Report – R&T WUIS Database Status
WUIS In-House Products Furnished	DTIC 2094, ADP Report – Cumulative Number of Users Served by DTIC-TOD for FY, Memo "Report of Selected Work Processes," Memo "Processing in Workdays WUIS"
WUIS Recurring Products	DTIC 121, Telephone quote form DTIC-HAR
WUIS Database Retrieval	DTIC 209A, ADP Report – CRT Utilization, Memo "Monthly Report of Remote Online Batch Products"
Program Summary In-House Products Furnished	DTIC 209A, Memo "Report of Selected Work Processes"
Program Summary Database Retrieval	DTIC 209A, ADP Report – CRT Utilization, Memo "Monthly Report of Remote Online Batch Products"
IR&D Database Input	DTIC 278
IR&D In-House Products Furnished	DTIC 209A, ADP Control #IM0080, Memo "Report of Selected Work Processes"
IR&D Recurring Products	DTIC 121

TABLE 3-2. PRODUCTIVITY MANAGEMENT REPORTS (Continued)

REPORT NAME	SOURCE OF PRODUCTIVITY DATA
IR&D Database Retrieval	DTIC 209A, Memo "Monthly Report of Remote Online Batch Products"
DROLS Interrogations	ADP Report – CRT Utilization, Manual report showing number of different categories of terminals used
Printing Plant Production	Manual report of logs of number of plates and units produced
SBIR Database Retrieval	Telephone quotes
MATRIS Database Input and Output	Memo from MATRIS Office
Quality Assurance – User Complaints on Demand Reports	DTIC 420
Quality Assurance – Quality of Technical Report Input	IOM
Quality Assurance – RDT&E Online System – Reliability	IOM
Quality Assurance – RDT&E Online System – Responses	ADP Report – Monthly Summary of Process by Time Intervals

(LERS)] This Office manually collates, summarizes, and transfers the data onto the appropriate summary report.

One copy of the four daily productivity reports is given to the Administrator and his deputy, the IAC Program Officer, the DLA Security Officer, the Directors of the Office of Installation, Office of Information Systems and Technology; five copies are given to the Directorate of Document Services and to the Directorate of Telecommunications and ADP Systems; six copies are distributed within the Office of Policy, Plans, and Resource Management; and nine copies are given to the Directorate of Database Services.

The monthly SMDR is distributed throughout DTIC and to DLA. The daily summary productivity reports include the:

- Daily Executive Summary containing processing status in six areas – TR orders, ADD, CAB, TAB, equipment, and other problems
- Demand Technical Report Production Report (DTIC Form 40) summarizing the number of TRs produced in different physical forms
- Technical Report Input Announcement and Subscription Status Report (DTIC Form 40A) indicating for each TAB cycle the number of inputs received and outputs produced by different organizations
- Daily Production Report (DTIC Form 40B) indicating the number of requests for bibliographies and the number of requests satisfied.

The Summary Management Data Report contains summarized information about productivity in: personnel, budget, quality assurance, printing, TRs, WUIS, PS, IR&D, DROLS, SBIR, and MATRIS.

Exchange Scientific and Technical Information Data

DTIC is one of many U.S. Government agencies that collect and disseminate STI. Of these agencies, four [DoD (DTIC), NTIS, DOE, and NASA] have STI facilities with similar missions and have formed an unofficial organization called the Commerce, Energy, NASA, Defense Information (CENDI) group. The National Library of Medicine (NLM) participates as an adjunct member. The CENDI group will become more formalized through a memorandum of understanding (MOU) that is being developed.

CENDI members work at two levels to facilitate the transfer of STI data. At a management level, they coordinate policy and long-term issues such as coordinating cataloging guidelines. At an operational level, they exchange data and services. At this level DTIC has a close relationship with NTIS. DTIC sends NTIS a magnetic tape of bibliographic citation data, and a hard copy and microfiche copy containing all unclassified/unlimited TRs. NTIS announces and disseminates those TRs. (DTIC also disseminates them.) NTIS is also sent a tape of citations and microfiche copies of TRs that are downgraded and have become unclassified or unlimited. NTIS

handles all of DTIC's users' deposit account billings for a monthly fee and also participates in initiating Demand Orders and AMTD.

Each month DTIC receives from NASA keypunch cards of TRs that NASA wishes to order and provides those TRs on microfiche. DTIC is arranging with the DOE STI Center to receive a tape of nuclear weapons citations, which can be added to DTIC's databases.

DTIC also exchanges data with some foreign governments. It operates as the U.S. distribution point for NATO documents and provides the AMTD service to the Governments of Great Britain, Canada, and Australia.

Operate Manpower and Training Research Information System

This description of the MATRIS process divides its operations into two areas: store MPT Data and disseminate MPT Information and develop new technologies for its dissemination. These are shown in overview form in Figure 3-15 and their specific functions in Figure 3-16.

Store Manpower, Personnel, and Training Data

Storing MPT data consists of acquiring, editing, augmenting, and entering. The MATRIS database consists of four basic inputs: program element summaries, project descriptions, task descriptions, and work unit descriptions. Program element summaries and project descriptions are derived from congressional descriptive summaries received from OUSDRE in the first quarter of each year and are updated and modified in the second as they are prepared for congressional review. Approved funding levels are further updated when the budget is passed in the third and fourth quarters. The most extensive work is done from January to March when typically 50 percent of the Sperry 1100/61 computer time used by MATRIS in a year is used during this time.

Work on the summaries begins by downloading the previous year's data from the main MATRIS database to PCs. The previous year's records are modified

FIGURE 3-15. MATRIS OFFICE PROCESS

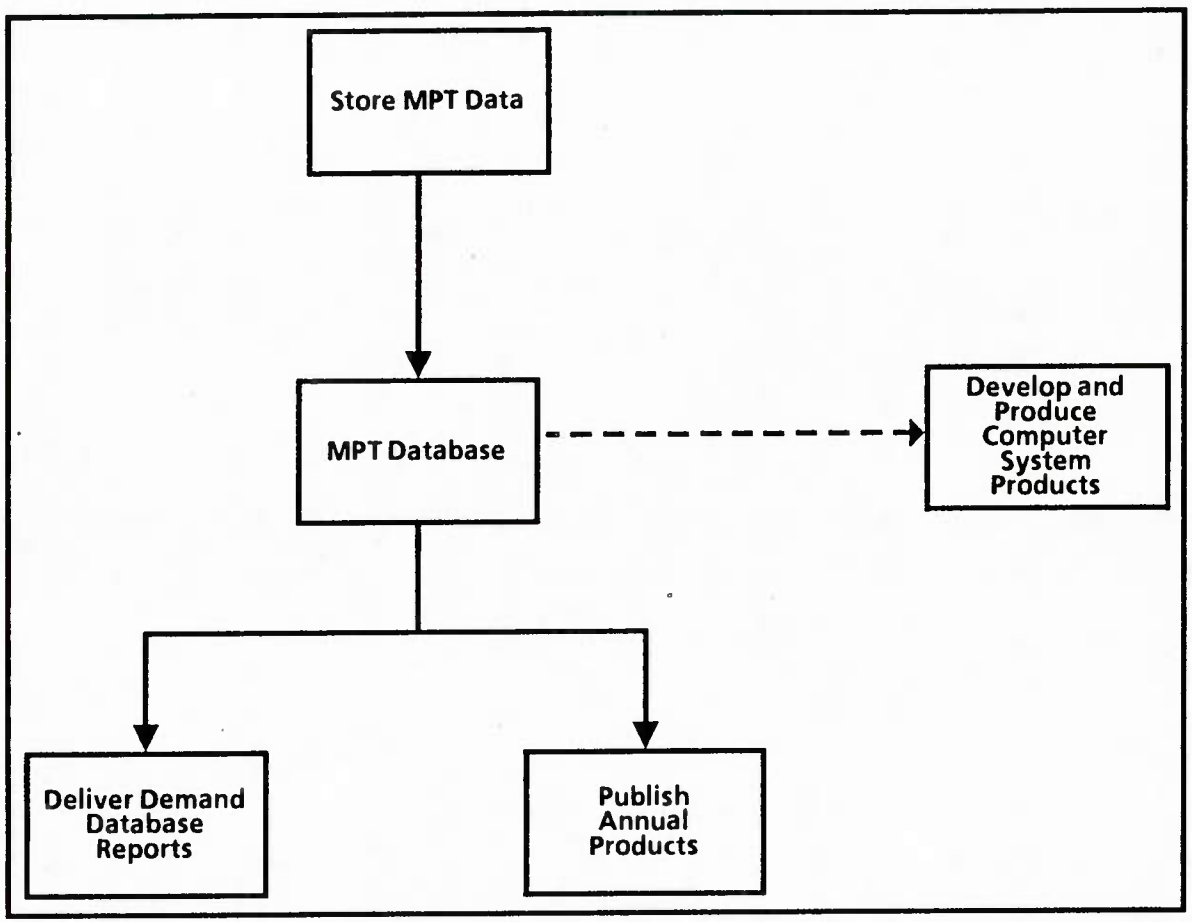
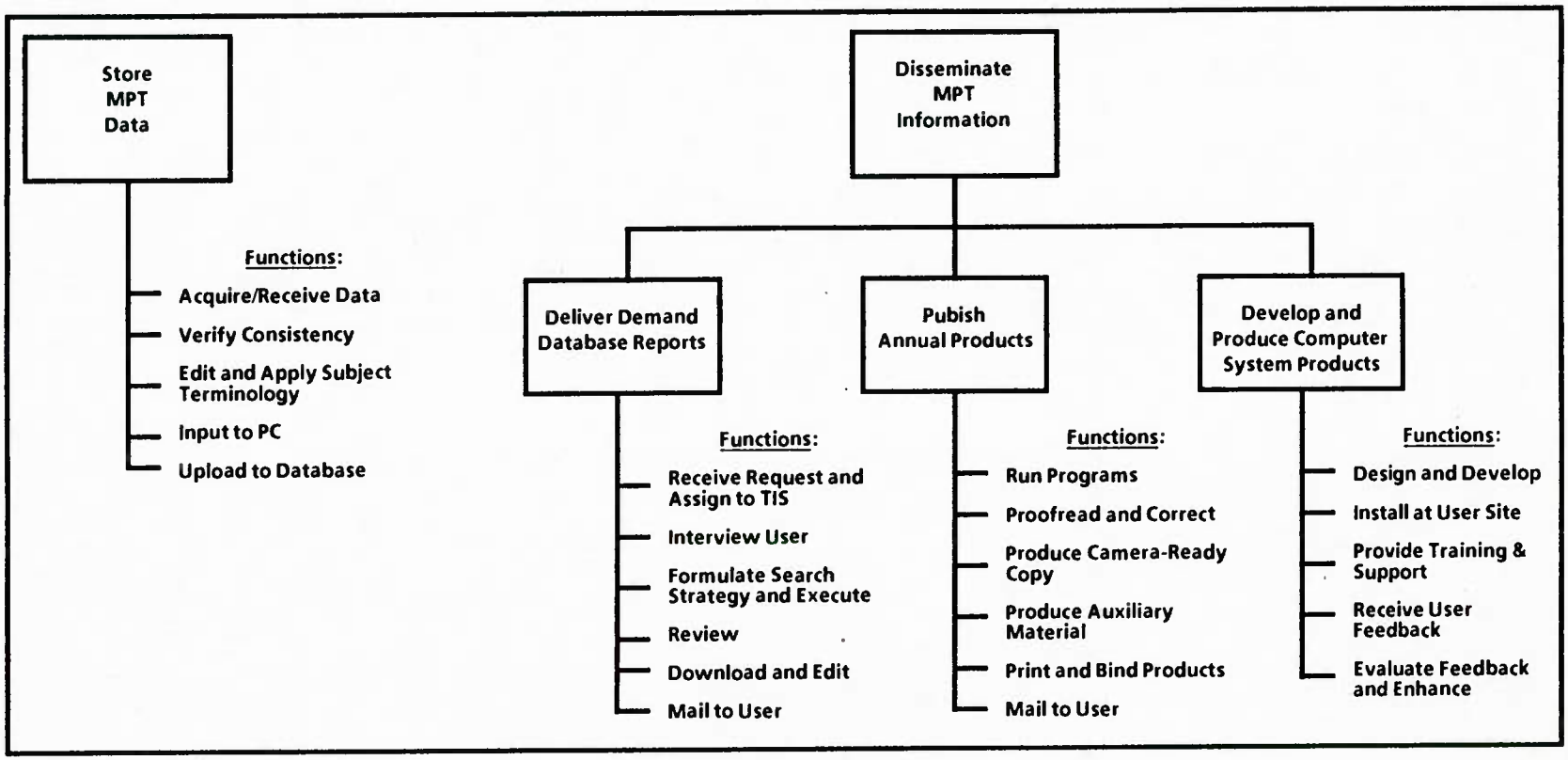


FIGURE 3-16. MATRIS OFFICE PROCESS FUNCTIONS



by Technical Information Specialists (TISs) to reflect the next fiscal year's submissions. Records for new program elements are entered in their entirety, and the TISs review them for accuracy and completeness, paying particular attention to the consistency of the financial data. Resolving questions about the data frequently requires interaction with the submitter. Task data are associated at the Service R&D laboratory level and are not aggregated. This data is used in some products. Work unit data relate to specific R&D projects and are received throughout the year from the various laboratories. Work unit information is derived from DTIC Form 1498 with much of the MATRIS version of the data reformatted and additional data being added. MATRIS, however, receives work units only for projects in the MPT area.

The primary sources for MPT data are the OUSDRE, the Army Research Institute, the Naval Personnel Research and Development Center (NPRDC), the Office of Naval Research, and the Air Force Human Research Laboratory. Overall 23 laboratories, plus contractors and organizations with grants, submit data to MATRIS. Approximately 45 program elements, 550 projects, and 4,500 work units are submitted to MATRIS each year. In FY85, 5,036 records were processed. Program elements and projects are primarily modifications to current ones. Work units are a mixture of new, modified, and closed items. Closed items are maintained in the database which currently contains more than 7,000 records.

The facilities send material either by hard copy, or microcomputer diskette. Hard copy data is sent to MATRIS where it is entered into IBM PCs, edited, and then uploaded to the database on the Sperry 1100/61. Diskette input is received only from those organizations with the MATRIS customized database software installed on a PC in their organization. This specialized software provides the user with an efficient tool for entering, editing, and reviewing MPT program data. When MATRIS submissions are sent on diskette, it is processed on PCs and then uploaded

to the Sperry 1100/61 (for the NPRDC this data is then copied onto tape and loaded onto the WUIS database on the Sperry 1100/82).

All the material received is reviewed and processed by a TIS. The processing includes collecting the needed data from any available source, verifying the data consistency (contacting the user if necessary), applying MATRIS subject terminology, and standardizing formats. It can require as much as 1 hour to process a new work unit and as much as 2½ hours for a program element description. Once reviewed and standardized, the material is entered into (or revised on) an IBM PC. Completed items are transmitted from the PC to the file-server for the local area network. From there, they are transmitted in batch mode to the MATRIS database on the 1100/61 computer at DTIC. In general, all input and editing is performed on the PCs except for minor changes that are performed directly on the MATRIS database using the BASIS database editing features.

Disseminate Manpower, Personnel, and Training Data

MATRIS disseminates and develops MPT information products and services primarily through three methods: demand database reports, annual publications, and computer system products.

Deliver Demand Database Reports

Demand database report processing begins with a user call to the MATRIS office. The call is assigned to an available TIS who interviews the requester to determine the nature of the information need. Notes on the call are kept on a MATRIS form. The TIS formulates the primary search strategy, and connects to BASIS through a PC and a modem using TYMNET. BASIS offers a great deal of flexibility in formulating the search and formatting the output. Once the TIS is satisfied with the search results, they are printed at MATRIS and reviewed. In some cases, the results are downloaded to the PC prior to printing. Once on the PC, the search output can be processed on a text-editor where keywords can be highlighted

and other alterations made to enhance the quality of the product. Once the review is complete, the bibliography is mailed to the user. Nearly 500 retrievals were completed in FY85, and that number has increased by more than 60 percent thus far in 1986.

To monitor the workload and system usage, MATRIS maintains a computerized logging system that tracks management and production information about each database retrieval including: client name and address, date requested, date needed, date sent, researcher name, hours worked on, and search strategy used. This system can be used to monitor the status of any given request, determine the workload, and monitor productivity. An additional feature is that it determines automatically the "next available" researcher for any incoming request. This system is maintained on the PC local area network. Figure 3-17 presents a representative record of this system.

Publish Annual Products

This section describes the production of two of the several annual MATRIS printed products. The "Annual R&D Program Description," is a compilation of the more than 40 major programs in the MPT area. It is produced in March to support DoD congressional budget testimony. The document is lengthy and requires substantial MATRIS time to produce. The document is derived from the database updates of the Congressional Descriptive Summaries. When the database is ready, programs are run to produce the draft report. Data transcribers proofread the data for typographic and spelling errors and then upload the data to the Sperry 1100/61 where the financial data are checked by program and the camera-ready copy of the report is prepared. The camera-ready copy is again proofread. At that time, other parts of the document – the table of contents, cover, and the DTIC Form 1473 – are produced.

FIGURE 3-17. SAMPLE MATRIS AUTOMATED USER REQUEST LOG

REQUEST #: 86-0114

CLIENT: Capt John Doe
Naval Post Graduate School
Department of Administrative Sciences
Monterey CA 93943

PHONE: 408-646-3000
AV: 875-1234

REFERRED TO:

LEVEL: MGR
REGIS #: 25744

REQUESTED:	1-16-86	**SEARCH DATES:**	ALL
NEEDED:	1-25-86	**SEARCH SERVICE/ORG:**	ALL
SENT:	1-21-86	**TYPE (WU, PE/PROJ):**	ALL
		FORMATS:	9

PROC. TIME: 180 mins.
OTHER TIME: 120 mins.

PROCESSED BY: SK **RETRIEVALS:** 2 **CAMERA-READY COPIES:** 0

BASIC QUESTION:
Interested in what we had in the database regarding financial types of compensation and everything we had regarding reserve manning.

STRATEGY:
Find PT, ST = 6.10.01 or 6.10.02 or 6.10.03 or 6.10.05 or 6.10.18 or 6.10.22 or 6.10.08 or 6.10.07 (compensation and special pay terms)
Find PT,ST = 13.01.15 or 13.01.23 or 13.01.23 or 13.01.24 or 13.01.05 (reserve personnel) or 6.10.05 (compensation for reserve forces - Dr. Coffey requested the duplication)

LEVEL OF DIFFICULTY:

COMMENTS:
Capt Doe is Chair of Training Analysis at NPG School.

SAMPLE DOCUMENT, FOR ILLUSTRATIVE PURPOSES ONLY

The completed document is sent to the Directorate of Document Services for printing. After printing, that Directorate wraps and mails the documents using mailing labels prepared by MATRIS. The report is added to the DTIC database, and any remaining copies are returned to MATRIS.

The "Directory of Researchers for Human Research and Development Projects" is derived from work unit data and lists each researcher/manager, project title, and researcher's telephone number. The entries are sorted into one of 12 MPT research categories, by Military Service, and then by researcher name. The purpose of the document is to facilitate communication and information sharing between the Military Services in the MPT area.

Publication of the Directory is initiated by running programs against the database to generate the alphabetic indices. The research organizations submit corrections to MATRIS and they are used to update the database. The camera-ready version is then run and reviewed. Final document preparation is completed and, like the R&D PS, it is sent to Document Services for printing and mailing.

Develop and Produce Computer System Products

The third area of MATRIS's dissemination of MPT data is computer system products. MATRIS develops and produces computer system products both to explore new methods of information technology and to disseminate current MPT data. One such product is the prototype "Executive Work Station." The Executive Work Station, contains records from the MATRIS database. It can correlate and manipulate the data across records, and display the results in a variety of formats including graphics. The Executive Work Station uses "Open Access," a commercially available database management system (DBMS) for the PC, in conjunction with selected portions of the MATRIS database. The MATRIS programming staff has menus, programs, and reports to allow easy-to-use access to these data. The Executive Work Station can produce graphs of funding, showing trends and com-

paring MPT funding with total DoD budget, and a variety of other outputs. The executive Work Station is a tool for the program manager rather than for the engineer or researcher. Prototypes of the Executive Work Stations were given to four selected users in 1985. Throughout the year, MATRIS staff provided training and support to these users. In 1986, data on their performance will be gathered and evaluated to plan the future direction of the project. The MATRIS office has an Executive Work Station that is simultaneously used for further software development and responds to user requests that require manipulation of data (especially fiscal) for outputting as graphs, tables, and listings.

The Custom Database Product is a second PC-based product that the MATRIS Office has developed. It uses DBASE III software to allow MATRIS users to build personal databases of MPT information. It also provides them with a convenient tool for entering and forwarding their MATRIS data submissions. This product has been delivered to the NPRDC, OASD(FM&P) and the Army Research Institute. MATRIS staff has assisted those organizations in the production of documents derived from these databases.

Operate Small Business Innovation Research Program

The SBIR Program is a consequence of a Federal legislation enacted in 1982 to give small, high-technology firms a greater share of Federal R&D contract awards. Federal agencies are required to offer selected R&D contracts to small businesses only. DTIC is a major component of the support for the DoD portion of this program, and its SBIR functions were summarized in Figure 3-14.

The SBIR program is a cyclical process that starts in the summer of each year, when the DoD SBIR Program Office releases to DTIC the research topics to be offered for the given year (in 1985, 760 topics were offered). During August and September, the Retrieval Analysis Branch runs searches in the TR and WUIS databases for each topic (in 1985, more than 1,500 searches). The SBIR Team (staff

members from the Office of User Services and part-time help from other DTIC organizations) requests 50 copies of each search to be produced by the Printing Branch along with a cover letter and other promotional material.

In October, the DoD releases the annual "SBIR Program Solicitation" listing each topic and a brief abstract of the work to be performed. The solicitation document also describes how to participate in the program and the special assistance available from DTIC. Small businesses request bibliographies on topics of their interest and they also get an information packet describing DTIC's services and the SBIR user code assigned for ordering TRs. SBIR participants can order up to 20 unclassified/unlimited TRs free of charge. The number of TRs a user requests is annotated in a log book beside the user code. When a requester exceeds 20 TRs, a service charge is imposed. The requester must send a check or cite its NTIS deposit account number before further TR orders are completed.

SBIR orders are accepted through a special toll-free telephone line over which the user may request the desired TRs or bibliographies. An SBIR staff member enters TR orders into the RP system. Each night, the SBIR picking tickets are printed and sorted before other picking tickets so they may be separated and sent to the SBIR Teams. The next morning an SBIR staff member picks up the tickets from the Microfiche Maintenance and Reproduction Branch and separates them by user code or organization. The employee writes the order on a DTIC Form 273 the day the order is placed. During the day all orders are collected and taken to the Microfiche Maintenance and Reproduction Branch, which pulls the microfiche and delivers them to the Paper Copy Processing Branch for production of the paper copy that same evening. The following day the TRs are taken to the Bindery Section, which begins work immediately and returns them to the SBIR Team that day. The SBIR Team then matches the picking ticket to the paper copy to ensure that everything

was produced and completes the workflow by placing the orders in envelopes and in a mail bag for shipment that day.

Users who need their TRs in a rush may arrange for an overnight air courier to pick up the material. The SBIR Team will place the material in a courier envelope, address it, and leave it at the security desk. The user is responsible for the costs and for arranging pick up and delivery. Orders for bibliographies and management reports may be completed immediately, since the SBIR Team maintains copies of them on the shelves in the SBIR area.

The SBIR cycle ends on 31 January and DTIC terminates the SBIR service. Over the next several months, DoD awards contracts based on the proposals. DTIC, when it becomes aware of specific awards, sends a letter and information to encourage the awardee to become a regular DTIC user. These follow-up letters are sent as time and staffing permit and do not reach a majority of the awardees.

DTIC first participated in the SBIR program in 1983 with the mailing of 3,700 bibliographies and 2,500 TRs. Since then, the volume has increased to more than 28,000 bibliographies and 15,000 TRs in FY86.

PROVIDE USER SUPPORT SYSTEMS PROCESS GROUP

The processes described in this section represent a diverse group of activities related to dealing with the user rather than producing products and services. There are seven processes: register users, register DROLS terminal users, bill users for products and services, train users for DROLS and input, receive user communications, conduct user conferences, and support user organizations. The functions of each of these processes are summarized in Figure 3-18.

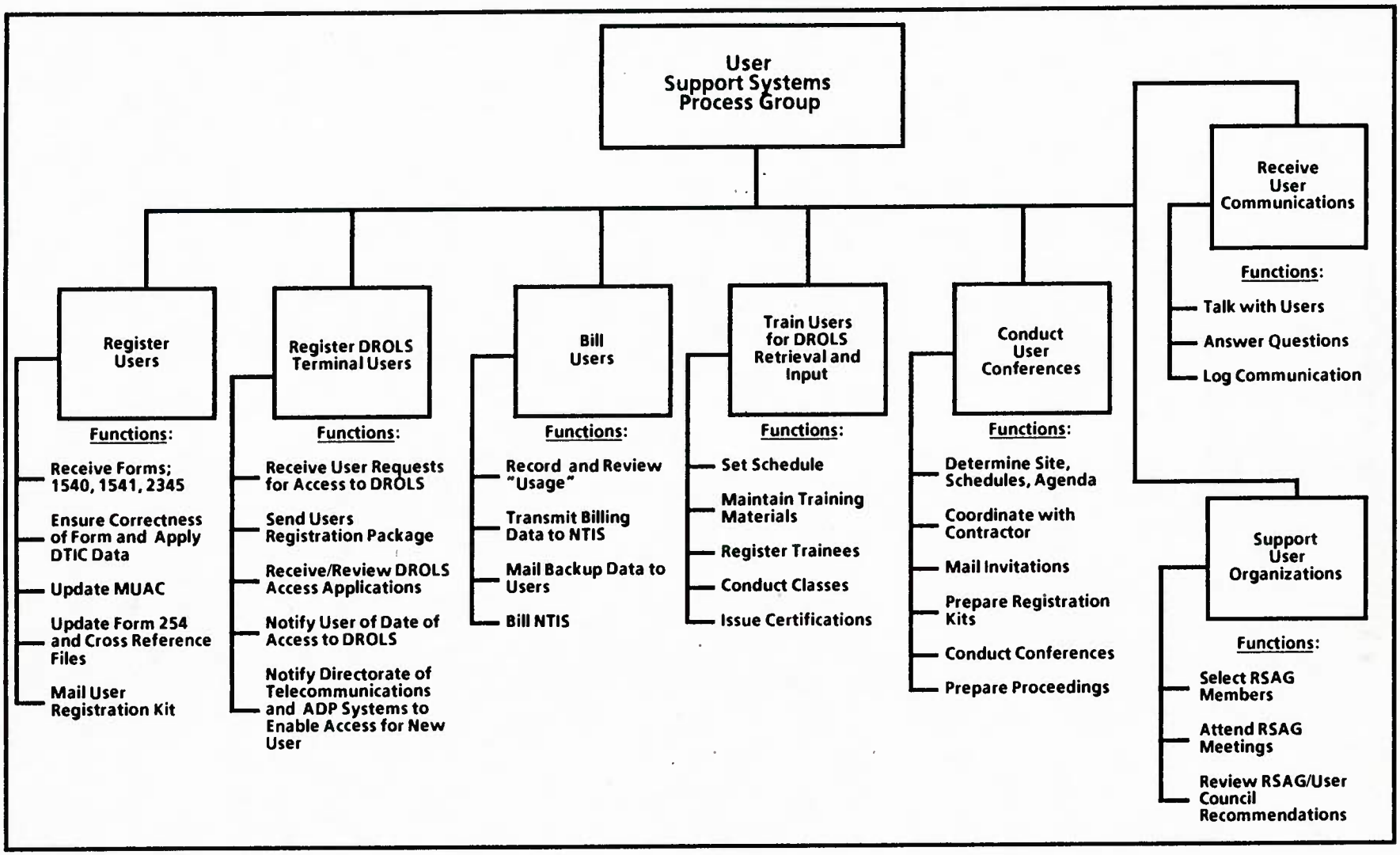
Register Users

The most complex and formalized of the User Support Systems processes is registering users. With the exception of providing reference service requests and assisting high-level Government officials, DTIC provides its products and services only to registered users.

Users begin the registration process by submitting a five-part DD Form 1540, "Registration for Scientific and Technical Information Services," to the Registration and Services Section in DTIC. Contractors submit a Form for each contract, approved by a Government contract sponsor. The sponsor is telephoned for verification of the approval when DTIC receives the Form. Government agencies require the approval of the next higher official within the STI area. The Registration and Services Section reviews DD Form 1540 for completeness, and accuracy. Forms received from a contractor are checked in the manual files to determine whether the requester is an active user, new user, or former user and whether the requester ever held that particular contract before. All contracts for a given contract are summarized on a DTIC Form 254.

To process the DD Form 1540 for a new user, a user code must be obtained from the new user code log book and placed on the DD Form 1540 along with the appropriate security codes and other data. Selected information from the DD Form 1540 is transcribed onto a DTIC Form 45, which is a column-oriented form used to

FIGURE 3-18. USER SUPPORT SYSTEMS PROCESS GROUP FUNCTIONS



keypunch data into the MUAC file. In addition, 3x5 cards are prepared for cross reference files (contract number, user code, and NTIS deposit account if applicable). Those cards and the DTIC Forms 254 (Control Card), Header and Correspondence File Card, DD Form 1541 (Facility Clearance Register if there is one), and one copy of the DD Form 1540 are then placed in their appropriate files.

A second copy of the DD Form 1540 for new, re-established, or current users and DTIC Form 45 for new, or re-established users are sent to the Production Control Branch for keying into the MUAC. The Registration and Services Section maintains a manual log of all transmittals for keypunching. Keypunching is performed from the DTIC Form 45 and portions of the DD Form 1540. The forms, the keypunch cards, and output MUAC listings are returned to the Registration and Services Section on the same day. The listings are proofread and either accepted or returned to Production Control for correction. If the file is correct or contains only minor errors, it is released for the MUAC update. If major errors are found on any of the transactions, the entire update is held until those errors are corrected. Both actions are noted in the manual log.

New users entered into the MUAC are given registration kits that include a copy of the DD Form 1540, information about DTIC, and an NTIS deposit account request form. The NTIS deposit account is important because all DTIC billings are charged to the user through NTIS. If the DD Form 1540 reflects a current user, only a copy of DD Form 1540 is sent to the user.

Contractor organizations requesting access to classified information must also complete DD Form 1541 "Facility Clearance Register." The contractor submits this completed form to the Defense Investigative Service, which will inspect the contractor's facility and, if approved, forward the DD Form 1541 to the Registration and Services Section in DTIC. Until DTIC receives DD Form 1541, the user is restricted

to unclassified use. The DD Forms 1541 are held in separate files from the DD Forms 1540.

Export control requirements have been added to basic registration procedures for contractors. These requirements are met through contractor submission of DD Form 2345, "Military Critical Technical Data Agreement." All contractors who desire DTIC services other than unclassified/unlimited must submit DD Form 2345.

DD Form 2345 is completed by the contractor and forwarded to DLSC for certification and approval. Upon receipt of an approved, certified DD Form 2345 from DLSC, the contractor forwards a copy to DTIC and their services are upgraded from unclassified/unlimited to those for which they now are cleared.

These steps complete the basic user registration process; however, additional information is maintained in the MUAC file and entered either at the time of registration or at a later date. This information includes the user's DROLS terminal type (e.g., classified), whether he receives the TAB and/or is eligible for free microfiche, the NTIS account number, and a variety of other information. [Note: The system can maintain only one NTIS account number even though a user may have more than one (the system does know there is more than one).] Other updates to the MUAC include change of address, adding or deleting contracts, change in facility clearance, etc. This information is periodically changed based on requests submitted by users or DTIC organizations (e.g., the Management Support Office supplies all information on user terminal status).

The MUAC is updated in the same manner as it is for new user registration by the Registration and Services Section submitting revised DD Forms 1540 and/or DTIC Form 45 to the Production Control Branch for keying. The updated MUAC listings are then reviewed for correctness and either accepted or returned for correction before inclusion in the MUAC.

The Registration and Services Section produces one recurring DTIC tool, the Dissemination Authority List (DAL). The DAL is a published version of the MUAC file, listing all registered DTIC users including their addresses, classification status, and user codes. The DAL is distributed every 2 months to requesting Government and IAC organizations. It is the only convenient way for those organizations and DTIC (e.g., field offices or the Retrieval Analysis Branch) to validate user access information.

Government users are required to re-register every year. DTIC sends a notification 60 days before expiration of the registration. Government users need only sign the form and submit it. Contractors are re-registered or deleted based on their active contracts. The Registration and Services Section also uses the MUAC file to provide user mailing labels to other DTIC organizations.

Register Defense Research, Development, Test, And Evaluation On Line System Terminal Users

Potential users desiring access to DROLS contact the Management Support Office in the Directorate of Telecommunications and ADP Systems. That Office responds to requests for DROLS access by sending the requester a DROLS information package that includes the DROLS policy, a DROLS application, a sample of the required security control procedures, and a publication (DTIC-R 5230.3 – Security Measures Applicable to the Defense RDT&E On Line System). For contractors, the package also contains Appendix B of the DoD 5220.22-R – Industrial Security Regulation publication and DD Form 2345 – Export-Controlled DoD Technical Data Agreement. To gain access to DROLS, users must be currently registered as a DTIC user.

The Management Support Office checks completed DROLS applications and the other security-related forms received from users for completeness and accuracy, and enters information onto DTIC Form 360 (a computerized form on the DTSS

system). That form contains all the necessary DROLS system and terminal parameters and configuration settings that govern the accesses allowed the user. The Management Support Office notifies the requester of the date that he will become an active DROLS user.

To make a user active, the Management Support Office gives hard copies of DTIC Form 360 to the Communications and Exec Team in the Technical Support and Control Branch of the Directorate of Telecommunications and ADP Systems. The DROLS Team and the Input Team of the System Design Branch of the same Directorate also receive the DTIC Form 360. A 5-day DROLS terminal user activation cycle begins on the first day of a workweek (DTIC Forms 360 received after the first day of the cycle are held for the next cycle) and is completed on the last day of the workweek. Unless the Management Support Office is explicitly notified that the activation cycle did not complete successfully, it is assumed that the user has become an active DROLS user by the end of the five-day cycle.

Several internal computer tables and programs must be updated with the information on the new user. (They must be similarly updated upon the removal of an active DROLS user.) The Input Team enters the updated information independently of the other two teams. The DROLS Team and the Communications and Exec Team must coordinate their updates and implement them at the same time because a computer program compares the information in the different tables to ensure accuracy and correctness of the updates.

Bill Users

DTIC bills users only for selected products and services as shown below:

- Billable Products/Services
  - DROLS dial-up connect time

- ADD program microfiche[1]
- Demand order bibliographies and reports on tape (RBMT)
- Automatic magnetic tape distribution (AMTD)
- Demand order microfiche/paper copy[2]
- Printing services (DLA only)

- Free Products/Services
  - DROLS dedicated line users
  - CAB/recurring reports
  - Demand order bibliographies and reports on paper copy
  - TAB
  - Reference services.

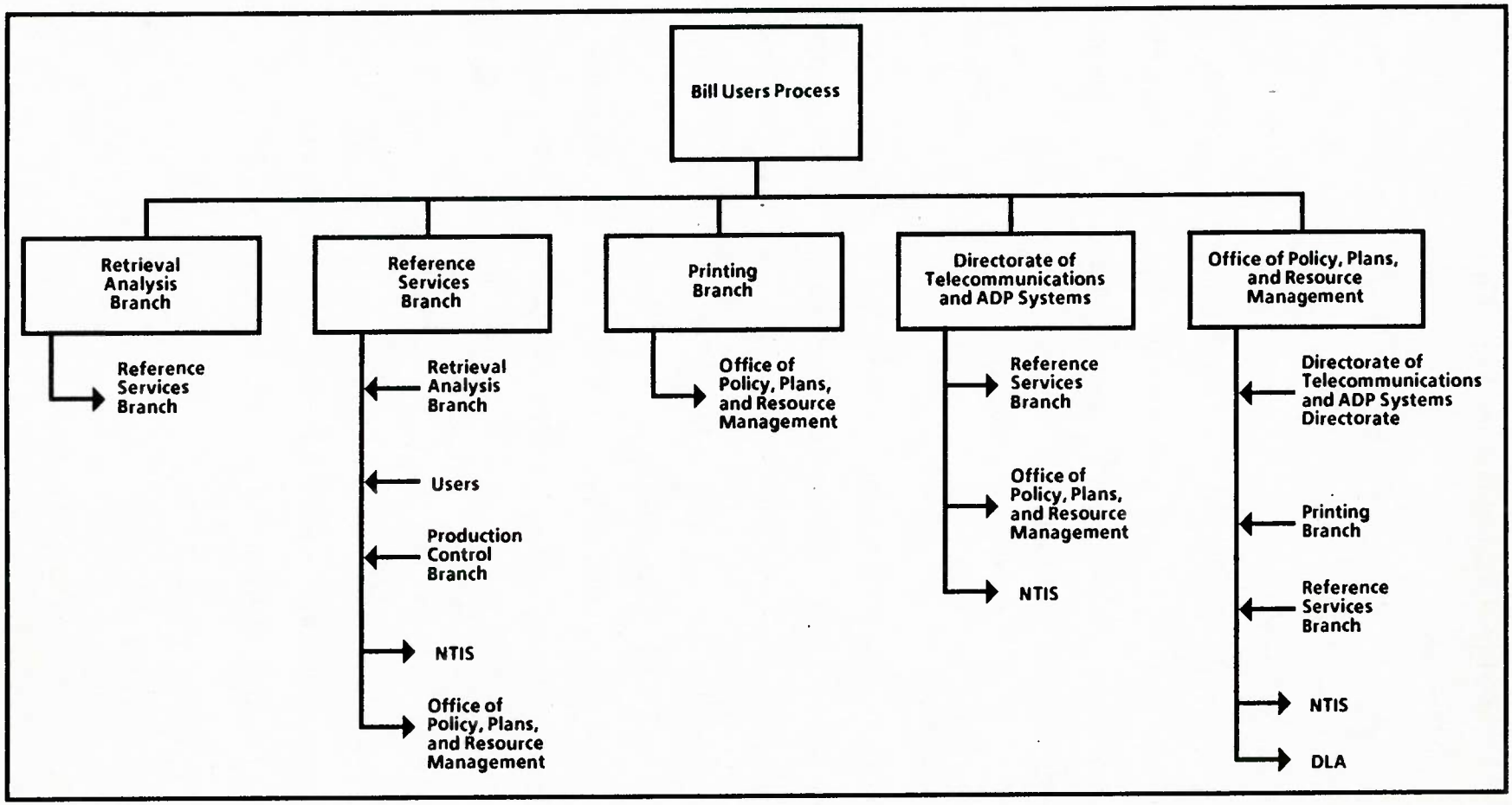
In most cases, billing for DTIC products and services is handled by NTIS, but several DTIC organizations participate in the process. The DTIC participants are shown in Figure 3-19. Toward the end of each month, DTIC sends NTIS three computer tapes: one for DROLS usage time, one for ADD microfiche, and one for demand order TRs.

At the same time, several listings are generated at DTIC. The Reference Services Branch receives a listing that shows every TR shipped to each user. This listing is mailed to the user as a backup to the NTIS bill, which does not itemize each AD number. The Reference Services Branch also receives summary listings of the demand document and ADD billings and reviews them for discrepancies in the number of documents sent, user codes, and deposit accounts. This listing is then

[1]Under certain circumstances, selected users are not billed for these services. Such users include Military Service schools and U.S. Military installations overseas.

[2]Under certain circumstances, selected users are not billed for these services. Such users include Military Service schools and U.S. Military installations overseas.

FIGURE 3-19. BILL USERS PROCESS PARTICIPANTS



forwarded to the Office of Policy, Plans, and Resource Management along with the letters on tape distributions.

The Retrieval Analysis Branch also notifies the Reference Services Branch of users receiving RBMT. The Reference Services Branch in turn notifies NTIS by letter. NTIS maintains records of AMTD subscribers, but receives a confirmation of tapes actually sent from the Directorate of Telecommunications and ADP Systems.

As a part of the monthly billing cycle, the Directorate of Telecommunications and ADP Systems also generates several listings on customer usage of DROLS. Copies of these listings are sent to users to help verify their NTIS bills. The Directorate also forwards a copy of the summary bill to the Office of Policy, Plans, and Resource Management.

That Office then accumulates the summary bills, totals them, deducts charges for which there is no proper NTIS account, deducts the NTIS monthly service charges, and forwards a bill to NTIS. The deductions for improper or nonexisting NTIS accounts result from errors in timing or entry in the MUAC file. Listings generated from the RP system can be used to correct the entries.

NTIS accumulates all of the data received from DTIC and sends the customer a single bill. The bill lists each service provided, but does not list details of the service such as the specific AD numbers ordered. The money is transferred from the user's deposit account to DTIC's account.

DLA is billed for its use of DTIC's printing services by the Office of Policy, Plans, and Resource Management. The Publications Division sends them the number of pages printed for DLA. DLA transfers the funds to DTIC's accounts to pay this bill.

Train Users For Defense Research, Development, Test, And Evaluation On Line System Retrieval and Input

DTIC trains users in how to retrieve information from the DTIC databases using DROLS, as well as entering TR, WUIS, IR&D, and IAC data into them using RTIS.

Training is organized into two retrieval and three input classes. Retrieval training for users with dedicated terminals consists of a 5-day course in which they are taught the sign-on procedures, the basic DROLS commands, and how to access the databases (TR, WUIS, IR&D). Dial-up users are given a 3-day course that covers the more complex connect and sign-on procedures, basic DROLS commands, and searching the TR database. The three input courses (SBIN-TR, WUIS/IR&D, and IAC) each last 2-5 days. They all relate to RTIS software and differ only in the data that is entered. The DTIC Training Team consists of one permanent and two part-time employees.

Typically one dedicated and one dial-up retrieval class is conducted each month. The average class size is eight; approximately 200 DROLS retrieval trainees a year. In addition, a class is usually given before or after each regional conference for an additional 50 people a year. These classes are valuable because they can be attended by users who cannot obtain funds to travel to DTIC. Input classes are held only a few times a year and approximately 30 people receive input training in a given year.

Class schedules are established for a 3- to 6-month period. User requests for training are scheduled on a first-come first-served basis. Users register by calling the training team in the Office of User Services. Sign-ups are maintained in a manual log. A month before the class, the attendees are sent a confirmation letter, along with a list of local hotels and a map of the area. After completion of the class, participants are given a certificate and a diploma.

Training classes are organized around lectures, working with an electrohome, and hands-on terminal time for the attendees. Attendees are also provided DROLS training tools: the training manual, the mini-manual, and the reference guide. Remote input training is different, because of the involvement of Directorate of Database Services and Document Processing Division staff members, to provide instruction on data format, acquisition and selection policy, subject indexing, and other related information.

Upon completion of the classes, no follow-up training is scheduled; however, the users may call the Training Team with questions.

Receive User Communications

DTIC's interactions with users are completely decentralized, including requests for specific services, requests for answers to generalized questions, and for complaints. Interactions with users occur mostly at the branch or section level. The DTIC focal points are reasonably well identified for responding to requests for services such as document or bibliography ordering (although the Reference Section and Retrieval Analysis Branch frequently transfer telephone requests). However, DTIC focal points for receiving requests for assistance with DROLS are not as well identified. Users are likely to come to any of the following:

- Office of User Services (to anyone)
- Office of User Services (training team)
- Directorate of Telecommunications and ADP Services
  - Management Support Office
  - Telecommunications Support Office
  - Technical Control Facility
  - Technical Support and Control Branch
  - Systems Design Branch
  - Operations Branch

- Retrieval Analysis Branch
- Reference Services Branch
- Comments entered online in DROLS.

Complaints may come to the Administrator, to the Office of User Services, to the Directorates, or to the organizational element providing the product or service.

Queries about DTIC and its products and services are likely to go to the Office of User Services, to the Directorates, or to lower organizational elements.

In general no specific procedure or process has been promulgated for receiving or responding to telephone calls from users. The calls are routed to the "person who can best respond." In many cases the quality of the answer is dependent on the knowledge the caller has of DTIC. An experienced user knows the best person at DTIC to call and the best way to frame questions to ask and usually obtains a knowledgeable answer. Less experienced users are not likely to be as successful. Except where required, no records of user contacts are kept. No mechanism exists for keeping information on calls about complaints, and similar comments for management evaluation, except for the Reference Services Branch which keeps records about complaints regarding document ordering and forwards them to management.

Conduct User Conferences

DTIC arranges seven conferences for users each year. Each fall an annual users conference is held at hotel facilities near DTIC. It is hosted by DTIC and support is provided by a contractor. The six regional conferences, scheduled between March and June, are usually hosted by a DTIC user in each region. The conferences involve the exchange of information and opinions. DTIC representatives present DTIC's current environment and future plans, and users ask questions and discuss their views on DTIC's services and their own information needs.

Planning for an annual conference begins the preceding winter by developing an agenda based on suggestions from the previous year's conferences, the DROLS User Council, and DTIC management. In the summer, conference invitations and registration packets are mailed. The conference is announced to all users, but only DROLS terminal users and local users are specifically invited.

A contractor selects the site, collects the money, and coordinates facility arrangements during the conference itself. Attendance at the annual conference has been steadily increasing, reaching a total of 274 users in 1985. The contractor tapes the main session and provides a transcript of the tapes. The Office of User Services converts the transcript into the annual proceedings, arranges for the printing of the proceedings, and mails copies to all attendees and DTIC registered users. The 3-day annual conference features addresses by the directors, question-and-answer sessions, meetings of special groups and committee, DROLS training, and other sessions.

The regional conferences are 2 days long. A DROLS training class is usually scheduled to immediately precede or follow the conference. The regional conferences, like the annual conference, are widely announced but only terminal users and new users in the region are specifically invited. One member of the DTIC staff, as well as representatives of the Office of User Services and the Support Files/Training Team, provide an update on DTIC's activities, answer questions, and provide training. The average attendance at regional conferences is 25-75 users.

Support User Organizations

DTIC supports two user organizations that provide general guidance to DTIC: the Resource Sharing Advisory Group (RSAG) and the DROLS User Council.

The RSAG is chartered by DTIC and was initially established to advise DTIC on matters relating to the SBIN program. However, it has evolved into a more general concept as defined in its charter:

> To provide advice and make recommendations on matters dealing with the Defense Technical Information Center (DTIC) resource sharing activities and developmental programs.

The RSAG consists of nine members appointed by the DTIC Administrator. The members are usually librarians or other representatives from some of the larger STI components of each of the Military Services and the DoD. The RSAG meets twice a year and at the annual users conference. It focuses on issues relative to the DoD STI program and prepares recommendations to DTIC.

The DROLS Users Group is organized by DROLS users independent of DTIC. The 11 members are elected by the users at the annual conference from the various DoD communities. The DROLS Users Group tends to focus on specific concerns. Each member usually specializes in one area of DTIC operations, (e.g., DROLS, obtaining limited documents, CAB, etc.) and assists other users with problems in that area. It makes recommendations to DTIC on a regular basis. The DROLS Users Group meets at one of the regional conferences, and in a joint meeting with the RSAG and the DTIC Management at the annual conference. In addition to the meetings, the DROLS Users Group publishes a regular newsletter describing its activities and the issues relating to DTIC. While DTIC did not organize the DROLS Users Council and does not participate in its operations, it does support it.

AUTOMATED DATA PROCESSING SUPPORT SYSTEMS PROCESS GROUP

There are three processes categorized as ADP support systems. All three processes relate to the many computer hardware and software products that produce DTIC's products and services. The three processes – operate ADP applications, develop and maintain ADP applications, and manage ADP equipment and resources – are shown in Figure 3-20 and described in the following paragraphs.

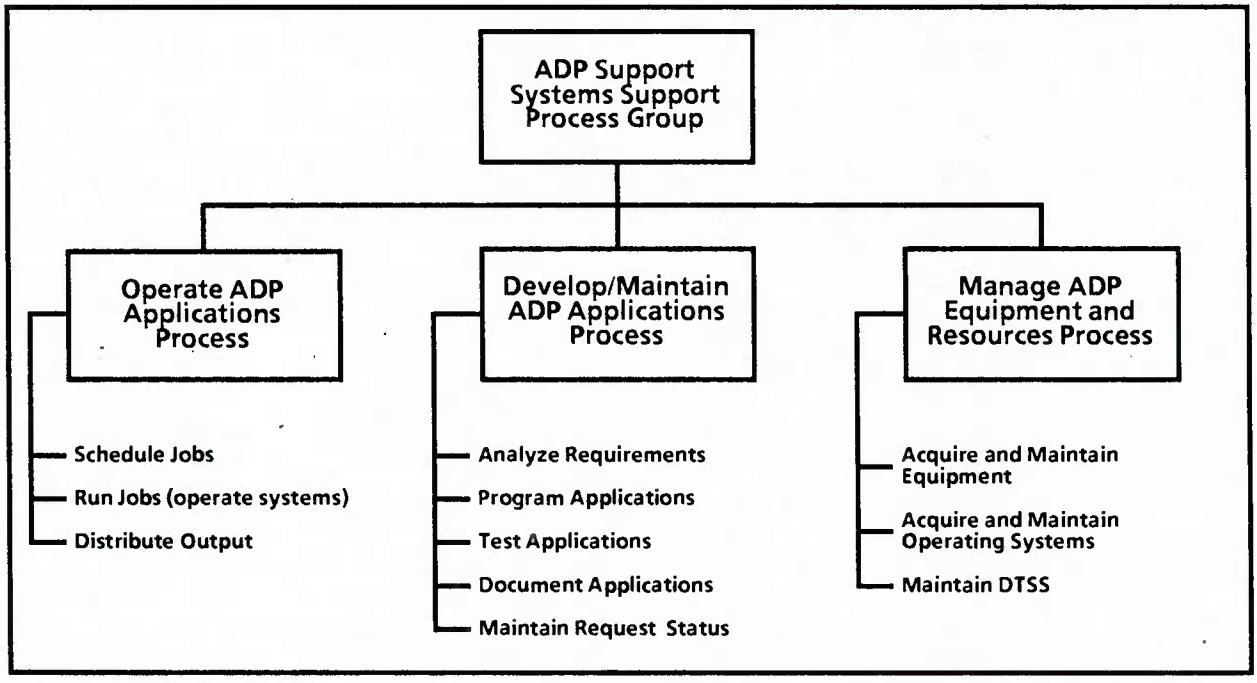
Operate Automated Data Processing Applications

In producing products and testing new ones, DTIC performs three functions: scheduling the job, running the job, and distributing the output. These functions support other support systems, most often those in the category of STI. The Production Control Branch schedules the jobs and distributes the outputs, while the Operations Branch executes them.

The normal processing flow of these three functions is described below. Additional, unplanned ADP jobs become necessary when a problem occurs with the hardware, software, or data. In those situations, the processing flow is revised depending upon the severity and nature of the backlog. Backlog jobs or reruns are often scheduled and executed while other production work continues.

In scheduling the jobs the Production Control Branch prepares the inputs, including the necessary files, job streams, control cards, and special instructions. The Input Control Team in this Branch receives input data from users, forwards those data to the Keypunch Team for keypunching onto cards, and schedules a job to be run by the Operations Branch. Sometimes, the Input Control Team receives the completed keypunched cards along with a printed listing to proofread and then forwards the job to the Operations Branch; other times, the Keypunch Team forwards the keypunched cards directly to the Operations Branch. Recurring production jobs to be executed on a regular and predictable time basis are scheduled by the Input

FIGURE 3-20. ADP SUPPORT SYSTEMS PROCESS GROUP PROCESSES



Control Team on an ADP Operations Production Control Schedule (DTIC Form 95). Job requests that are not production jobs (and may be test jobs from the development or maintenance programmers) are requested on a form called ADP Service Request (DTIC Form 160). An ADP Operations Executive Schedule is prepared to provide the Operations Branch and its Computer Room Shift Teams with priority guidelines for running production and nonproduction jobs. This Schedule is divided by time slots to reflect the following priorities: (1) from 0800 to 1930 process all jobs possible, while DROLS and DTSS operate; any work that remains is processed after normal daily production, unless a higher priority is indicated; (2) from 1930 to 2400 process for all daily production jobs followed by other production and testing jobs, if time is available; (3) from 2400 to 0600 allow jobs from the previous time slots to continue along with housekeeping and system logging jobs; and (4) from 0600 to 0800 process program testing and mass storage analysis jobs.

The Management Support Office (ZM) also supports the operations of DROLS by responding to the inquiries and requests from active and potential DROLS users.

The Computer Room Shift Teams of the Operations Branch receive the input specifications and job instructions from the Production Control Branch, and execute the jobs accordingly. Completed outputs – printouts as well as magnetic tapes prepared for users – are submitted to the Output Control Team of the Production Control Branch. That Team logs the output results, checks the quality of the results to ensure completeness and adherence to the requirements of the job, and distributes the output.

The Production Control Branch Teams and the Operations Branch Teams meet frequently to review the status of production jobs. The Production Control Branch staff includes document specialists, production schedulers, and computer programmer analysts. Following is a list of some of their activities illustrating the procedures performed by the ADP Division.

The document specialists:

- Develop the ADP Operations Production Control Schedules (DTIC Forms 95) and revise them as necessary
- Develop and maintain the master run guides that contain detailed steps for executing the jobs and the tape label file that keeps track of the magnetic tapes containing input and output data and of other internal computer job documentation
- Develop the daily jobs backlog report
- Compile productivity data for the pipeline and other management reports
- Monitor the workflow.

The production schedulers:

- Receive the schedule of jobs from the documentation specialist, review it and the ADP Service Requests (DTIC Form 160), and develop a final schedule for running computer jobs
- Work with internal and external DTIC users, as well as with the DTIC programming staff, to prepare and set up jobs to be executed on the computers
- Examine past usages and data processing inventory files to respond to some management inquiries
- Forward job requirements to Operations Branch personnel
- Analyze and determine the necessary corrective actions to solve problems involved in completing scheduled but incomplete computer jobs
- Recycle and replenish the tape file and monitor the workflow.

The computer programmer analysts:

- Analyze and take corrective action on computer system problems that occur during or as a result of production or test jobs e.g., reassign mass storage allocations to successfully recompile application programs
- Establish and execute data file and database recovery procedures
- Optimize computer resources by analyzing computer generated diagnostics and utilization reports
- Change production application programs to facilitate resumption of scheduled production jobs
- Maintain computer libraries containing the production application codes and data files

- Work with the application development programmers and users to assist as needed
- Help perform parallel tests of newly developed code and conversions from existing code.

Develop And Maintain Automated Data Processing Applications

Developing ADP Applications has a primary objective of introducing new ADP functions. Maintaining existing ADP applications consists of improving the operation or performance of an application or keeping it operational when the environment changes. Both of these activities are treated as a single process since they utilize a common set of functions. The major functions include: systems analysis and design, programming and testing, and documenting the systems. Additionally, the organization must evaluate and manage the requests for services.

Developing and maintaining ADP applications are performed by the Technical Support and Control Branch and the Systems Design Branch. Both are organized into four teams each of which participates in both processes. These teams are organized by functional assignments as described below. However in practice, any team may be assigned responsibility for an application that ordinarily would go to the specific functional team, if the workloads among the teams are imbalanced. In practice, these teams work closely together and are relatively experienced with applications not normally assigned to their functional team.

The Systems Design Branch consists of the Input Team, the Output Team, the DROLS Team, and the Document Order Team. The Input, Output, and DROLS Teams share responsibility for the four DTIC databases. One team focuses on the processing leading to the input of data to the databases; one team focuses on the online, interactive processing that enables users to perform their inquiries; and one team focuses on the applications that produce the output reports. These three teams support the functional responsibilities of the Directorate of Database Services and

often meet with the corresponding branch or team from that Directorate to effect a new ADP function, or implement a fix to an existing one. The fourth team, the Document Order Team, and supports the Directorate of Document Services and the Request Processing system.

The Technical Support and Control Branch consists of the Communications and Exec Team, the DTSS/Documentation Team, the Database Management Team, and the Support Files/Training Team. The Communications and Exec Team is responsible for maintaining, upgrading, installing, and testing new releases of the Sperry operating systems; maintaining and testing communications software; and acting as the point of contact for Sperry support contractors and for the engineers. The DTSS/Documentation Team performs a dual role as an application development and maintenance team as well as an ADP documentation librarian, maintaining a central location for all ADP application documentation developed by DTIC's programmers and systems analysts. This Team administers the DTSS system by enabling new users to use the system, removing users, changing passwords, keeping track of system usages, and protecting files belonging to users. It also performs program development and maintenance activities. The Database Management Team is responsible for the database software including interface routines developed to enable application programmers to access the databases. This Team assists in the functional design and redesign of new database application functions. Maintaining nondatabase files is the responsibility of the Support Files/Training Team as is programmer training.

Requirements for new and enhanced functions or capabilities are identified for implementation into existing ADP application systems formally and informally. The formal process utilizes DTIC Form 372, Request for Data Systems Software Support. This DTIC Form is used to record, review, evaluate, and accept or reject requests for additions or changes to DTIC's ADP application systems. A request for a

functional addition or change to an application is documented on a DTIC Form 372 and sent to the Office of Information Systems and Technology. That Office coordinates DTIC Form 372 from its initiation to its conclusion which may include a decision to accept the request and implement it, to defer it, or to reject it. Requests may originate from the users of DTIC's products and services or they may come from the DTIC Directorate that has functional responsibility for the product or service involved in the request.

After a DTIC Form 372 has been initiated, the Office of Information Systems and Technology forwards it to the Directorate of Telecommunications and ADP Systems for evaluation. This DTIC Form is shared among the division, branch, and team that have systems responsibility for the potentially affected ADP applications. The evaluation involves:

- Understanding the request and obtaining clarification and additional details from the requesters as necessary
- Examining and analyzing the existing system to identify the necessary systems activities required to implement the requested function
- Determining the necessary level of manpower and system resources needed for that implementation
- Providing feedback as to the viability of the request.

This evaluation analysis is most often accomplished within the Directorate of Telecommunications and ADP Systems by the systems and programming personnel most experienced with the functions and applications under question. If the request affects more then one program or application, several systems personnel reach a consensus to the evaluation. DTIC Form 372 is updated with this information and retained by the Directorate until implemented. Usually, DTIC Form 372 undergoes this evaluation cycle once for a single iteration. Sometimes the evaluation of the request continues for additional iterations of review, and additional discussions take place before arriving at the final decision to accept or reject it. The Directorate is

responsible for implementing the action once the request has been accepted and approved. Another formal process is a request via the Model Installation Program (MIP) or the DTIC employee suggestion program.

The informal method for identifying additions and changes consists of discussions of the needed addition or change among staff members of the Directorate having functional responsibility for the product or service systems and programming staff members of the Directorate of Telecommunications and ADP Systems having the ADP responsibility. These requests are often implemented by an informal decision of the Section or Team leader to do so with an informal agreement with the Branch Chief.

As indicated, two branches with four teams each are the major organizational elements involved in the development and maintenance of DTIC's ADP applications. The Communications and Exec and the Database Management Teams support the other six teams by providing telecommunications, database, and operating systems expertise, and performing specific implementation tasks that cross a number of application systems. These two Teams obtain many of their task requirements from the other six, have specific application responsibility, and receive their requirements from DTIC Forms 372 as well as informally. The Output Team derives its workload requirements almost exclusively from the DTIC Forms 372, while the Application Teams derive approximately 60 percent of their workload from DTIC Forms 372 and the balance from normal program maintenance tasks.

Systems analysis, systems design, programming, and testing are performed to implement formal and informal requests; they are also performed to implement a solution or to fix a problem involving programs and systems in production. Such problems may occur when a new feature or function is added to the system's operating environment that was not anticipated or known at the time the production program or system was implemented.

Accepting additional systems development and maintenance tasks is influenced by current workloads as well as future tasks for which resources are committed. Available manpower and system resources also influence acceptance of additional tasks. The team leaders in the System Design Branch write weekly status reports describing the past week's activities and progress. The four weekly status reports are reviewed by the Systems Design Branch Chief who in turn reports to the Division Chief. In the Technical Support and Control Branch, the four teams report their status at varying times to their Branch Chief and, in some situations, directly to the Division Chief. A listing shows current ADP projects and indicates planned and replanned completion dates.

Manage Automated Data Processing Equipment And Resources

Numerous lists and reports are available for managing the data processing hardware and software resources. For example, one computer listing shows all equipment and software programs and another listing, in excess of 200 pages, shows an inventory of ADP equipment (ADPE). This latter is the Directorate of Telecommunications and ADP Systems (DTIC-Z) ADP Inventory Report which shows the name of the equipment being described and provides its serial number, location, cost, and whether it was leased or purchased, along with any applicable contract numbers. This inventory identifies microcomputers, memory storage devices, display monitors, etc. A similar listing of only telecommunications equipment is available, and it includes information to identify users with access to DTIC's computers. To track the software program developed in DTIC, the Computer Program Inventory lists more than 500 programs, indicates the language used by the program, its program identification code, name, and author. A Program Abstract Listing provides a short one paragraph description of the program's function.

Systems engineers from Sperry under contract to DTIC perform systems preventive maintenance as well as troubleshoot system hardware and software problems on-site.

To manage the ADP application development and maintenance activities, supervisors of teams or sections that perform these activities report their progress to their branch chiefs. The branch chiefs consolidate and summarize these reports into project-oriented status information and, in turn, report them to their division chiefs who, in turn, develop a summarized status summary of the projects for their director. Often, status reporting is oral as well as written. No use is made of automated project management tools.

The DTSS is a time-sharing service provided by DTIC to meet the information system/design support needs of DoD R&D program managers. It also fulfills DTIC's internal needs for online software and database development capabilities not available on the DROLS computer. The DTIC Sperry 1100/61 computer is used to operate DTSS. The DTSS/Documentation Team in the Technical Support and Control Branch of the Directorate of Telecommunications and ADP Systems operates and maintains DTSS. This Team also develops some applications and currently maintains them. Other DTSS users that develop their own applications are responsible for maintaining them.

The following applications are active on the DTSS:

- JOUR is a library acquisitions tracking database used by the Office of Installation Services for the DTIC technical library to avoid duplication, overlap, or lapse in the ordering of books and journals.
- FORM 1 VALIDATION validates document requests received from users by the Reference Services Branch of the Directorate of Document Services.
- FORM 55 PRE-VALIDATION validates a user's authorization to receive classified TRs (pending releasing agency approval if needed). This file is used by the Registration and Services Section.

- PROOF-OF-SHIPMENT VALIDATION validates information about document shipments entered by the Reference Services Branch of the Directorate of Document Services.

- The ACQUISITIONS DATABASE is used by the Acquisition Section of the Directorate of Document Services to track documents that have been requested from other agencies.

- DROLS REGISTRATION DATABASE is used by the Management Support Office of the Directorate of Telecommunications and ADP Systems to keep track of users of DROLS.

- DROLS COMPUTER AIDED INSTRUCTION is a training program for DROLS users in the use of DROLS and its functions.

- COSATI (bibliographic database) is used by the Bibliographic Database Branch in the Directorate of Database Services to maintain the COSATI terms.

- CURRENT AWARENESS PROFILES are developed and maintained on DTSS by the Retrieval Analysis Branch in the Directorate of Database Services.

- ADP INVENTORY SYSTEM is a database that lists all computer-related equipment used at DTIC and is used by all the Branches in the Directorate of Telecommunications and ADP Systems.

- PROGRAM INVENTORY SYSTEM is a database that lists all computer programs in production at DTIC, and the PROGRAM ABSTRACT BULLETIN is a database of a brief description of these computer programs; both are used by all the Branches in the Directorate of Telecommunications and ADP Systems.

- TRIANNUAL REVIEW OF DOCUMENTATION is used by the DTSS/Documentation Team in the Directorate of Telecommunications and ADP Systems to keep track of program documentation that has been reviewed and its next review date.

- ANNUAL VERIFICATION OF NEED is used by the DTSS/Documentation Team in the Directorate of Telecommunications and ADP Systems to verify that production reports are still desired by their recipients.

- TAPE MANAGEMENT SYSTEM is a database used to keep track of all tapes used at DTIC and is used by the ADP Division in the Directorate of Telecommunications and ADP Systems.

- WORKLOADS DATABASE is used by the Directorate of Telecommunications and ADP Systems managers to track and report the status of their ADP projects.

- DTSS USER LIST/DTSS MONITORING SYSTEM/DTSS DISTRIBUTION POINT LISTING are systems used by the DTSS/Documentation Team in the Directorate of Telecommunications and ADP Systems to operate and

manage DTSS; the user list contains a list of all users and their identifying characteristics, the monitoring system keeps statistics on the users use of DTSS, and the distribution point listing indicates the mailing or delivery addresses for the users.

- MATRIS SYSTEM (described elsewhere in this report) is used by the MATRIS Office.

- DLA-TO (DTIC) Security Listing and Database is used by the Command Security Office to screen visitors coming to DTIC and keep track of their clearances as well as other security related information.

STAFF FUNCTIONS SUPPORT SYSTEMS PROCESS GROUPS

These support systems represent activities ordinarily considered as administrative or staff functions. These staff functions are organized into the following five process groups to facilitate presentation: administer the organization's structure and policies; administer the organization's finances; administer the organization's human resources; perform public relations and marketing activities; and provide common, centralized administrative support services. Figures 3-21 through 3-25 depict the specific processes within each group. Since these processes contain a limited number of manually oriented business functions which are also frequently similar across processes, these functions are not listed on the charts.

The first three process groups cited above are the responsibility of the Office of Policy, Plans, and Resource Management. Most of the functions in those groups are performed manually, utilizing various forms for data recording and reporting. Many of the functions are routine, and their objectives are specified in DLA and/or DTIC regulations and policy statements. (The procedures for attaining those objectives, however, are not explicitly specified.) A common characteristic of these functions is that they can be performed independently of one another. The fourth major process group cited above is the responsibility of the Office of User Services, and the fifth is accomplished by the Office of Installation Services. That Office has developed standing operating procedures to describe the detailed procedures used to perform their business functions.

Administer The Organization's Structure And Policies Process Group

Fourteen processes are involved in administering the organization's policies:

1. Maintain DTIC's organizational structure
2. Develop DTIC policies
3. Manage the position management program
4. Provide technical orientation for new employees

5. Manage SOPs
6. Implement the MBO program
7. Manage the major projects system
8. Manage the internal control program
9. Administer external audits
10. Manage corporate planning for DTIC
11. Manage the DTIC Vital Records Program
12. Administer the Freedom of Information Act
13. Manage the Defense Regional Interservice Support (DRIS) Program
14. Manage the emergency planning function of DTIC.

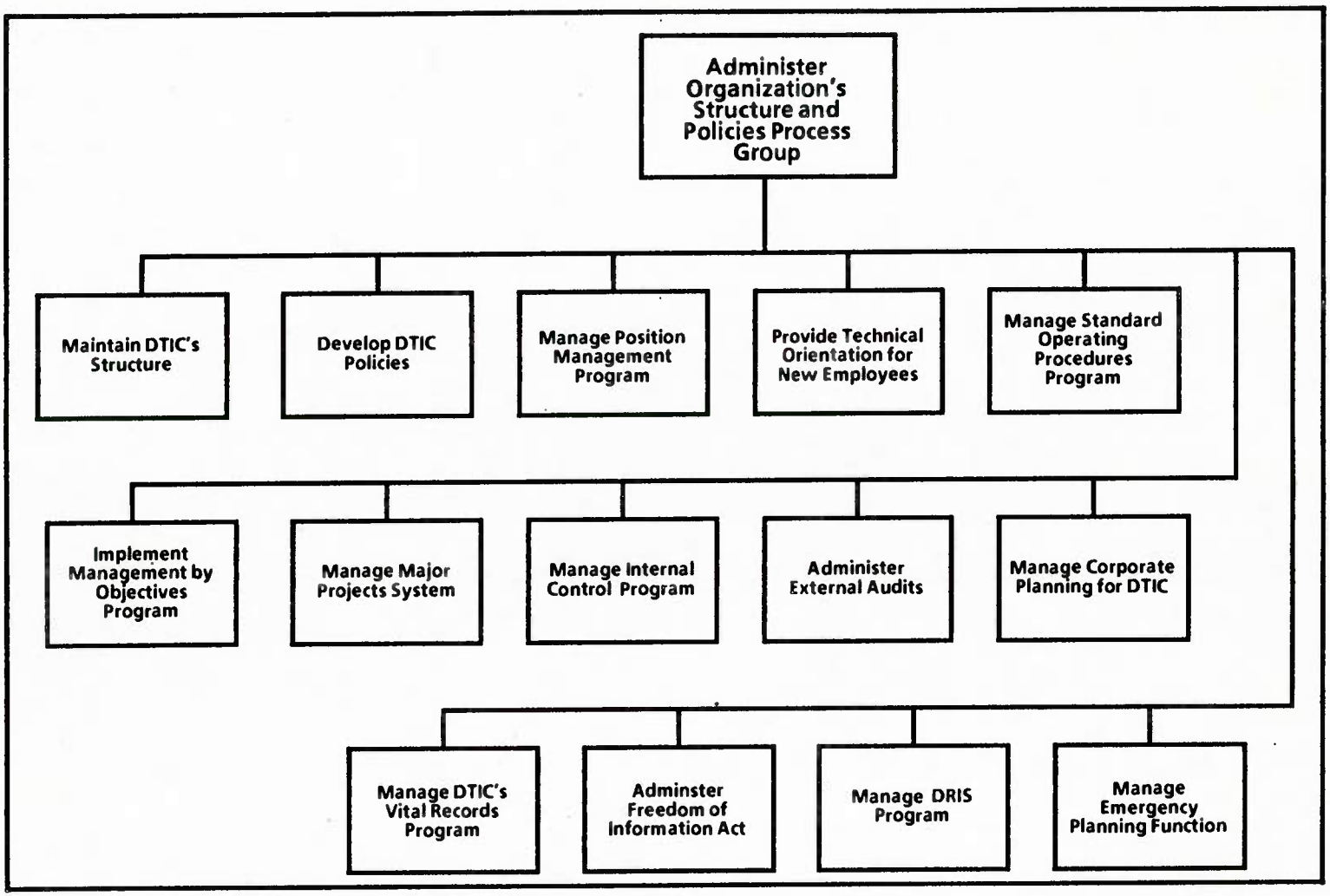
This group of processes is performed by the Organization and Mission Control Division of the Office of Policy, Plans, and Resource Management. These processes are illustrated in Figure 3-21 and summarized below.

Maintain the Defense Technical Information Center's Organizational Structure

When modifications or changes are made to DTIC's organization, responsibilities, and functions, DTIC-LP takes the following actions:

- Develop and coordinate mission and function statements with appropriate DTIC organizations
- Assign organizational symbols
- Draw new organizational charts
- Write justifications
- Coordinate the implementation of changes with this Office's counterpart at Headquarters, DLA
- Contact the American Federation of Government Employees Local 2449 and coordinate proposed changes and potential impacts
- Prepare, publish, and distribute general orders implementing the changes.

FIGURE 3-21. ADMINISTER THE ORGANIZATION'S STRUCTURE AND POLICIES PROCESS GROUP PROCESSES



DTIC-LP also reviews DTICM 5810.1, "Organization, Missions, and Functions Manual" annually, updates, and republishes it as required.

Develop Defense Technical Information Center Policies

DTIC-LP maintains a file of DTIC policy statements. The Office of Installation Services maintains a file of regulations from the DASC. DTIC's policy statements are reviewed annually and revised as needed. When additional DTIC policy statements are needed, this Office drafts policy statements, coordinates them with other DTIC organizations, prints them in their final form, and distributes them to all supervisors.

Manage the Position Management Program

DTIC's Directorates and Offices submit to the Organization and Mission Control Division "Justifications for Filling Position" (DTIC Form 462). That Division then coordinates all actions for filling or creating new positions in DTIC's organization. Each month the Division provides DLA with a Monthly Summary of Position Management Actions. The Division also reviews positions on a periodic basis to ensure that position descriptions and workload forecasts are adequate and that the complexity of the work is properly defined in position descriptions and in organizational mission and functions statements. For the position management reviews, Defense Integrated Management Engineering System (DIMES) analysts are consulted to determine the required workload size and staffing patterns.

Provide Technical Orientation for New Employees

Periodically, DTIC organizations supply a list of employees who have joined DTIC during a specified time period. Preparation for orienting new employees includes setting a date, reserving a conference room, developing materials for a presentation, and recruiting DTIC presenters. New employees are also taken on a tour of the micrographic area printing plant, computer room, and other areas of DTIC. The Office of User Services gives the first orientation to new employees; the Office of

Policy, Plans, and Resource Management gives a follow-on orientation and training session after the employees have been with DTIC for a period of time.

Manage the Standard Operating Procedures Program

This Division requests new or revised SOPs from DTIC organizations and analyzes them for accuracy, duplications, omissions, and procedural improvements. This Division signs final SOPs and distributes them to all elements in DTIC. They distribute a list of current SOPs twice a year.

Implement the Management by Objective Program

New MBO objectives are written or revised by DTIC organizations. They write outcome statements for each specific objective, and identify critical paths for accomplishing these objectives. Quarterly, DTIC-LP reports the status of MBO activities to DLA. They also maintain a central file of MBO milestone charts and provide technical assistance to the other organizational elements.

Manage the Major Projects System

DTIC Directorates and Offices develop project statements for major projects describing the nature of the project, the resources and equipment needed, the justification and benefits of the project to the DTIC mission, and milestones for completing the project. The Organization and Mission Control Division analyzes project statements against DTIC's missions and recommends them for approval or rejection. The Administrator approves statements that fall within DTIC's mission and the Division assigns a unique project number and subsidiary cost code.

Manage the Internal Control Program

The Internal Control Program establishes checks and balances to prevent losses from fraud, waste, abuse, and mismanagement of resources. This Division writes procedures and policy guidance. The Division also monitors the resolution of corrective measures of any control deficiencies and prepares the annual certification for the Administrator to forward to the Director, DLA.

Administer External Audits

The Organization and Mission Control Division arranges all visits for audits, inspections, and other similar reasons; ensures follow-up action DTIC-wide for all audits; and informs DLA-C of all external audit contacts and the objective of the audit.

Manage Corporate Planning for the Defense Technical Information Center

This Division functions as the staff office in scheduling corporate planning conferences, developing agenda topics, selecting speakers, preparing conference materials, arranging lodgings, attending and recording conference action items, and following up on action items. It also manages the corporate planning program at DTIC and develops, coordinates, and manages strategic planning for DTIC.

Manage the Defense Technical Information Center Vital Records Program

The Division manages a program that safeguards essential DTIC records in the event of a major disaster.

Administer the Freedom of Information Act

The Division analyzes requests for information under the Freedom of Information Act. They refer requesters to NTIS for unclassified documents and to the responsible military activity for classified and limited distribution documents. They analyze the cost to make the information available and collect fees prior to releasing the material. For requests that are denied, they prepare a letter indicating the reason for denial, coordinate the letter with DLA legal services, and mail it to the requester. They submit triannual reports to DLA.

Manage Defense Regional Intensive Support Program

The Office of Policy, Plans, and Resource Management manages the DRIS Program. Additionally, this Office maintains files of correspondence and letters of understanding governing services provided by one agency to another.

Manage the Emergency Planning

The Office of Policy, Plans, and Resource Management provides planning information and coordinates the development of war and emergency plans to ensure continuation of DTIC's services. They arrange periodic in-house drills, exercises, workshops, and off-post training to ensure effective and safe execution of the emergency plans. The Office also plans for security against espionage, subversion, sabotage and other disruptions, and coordinates them with other emergency plans.

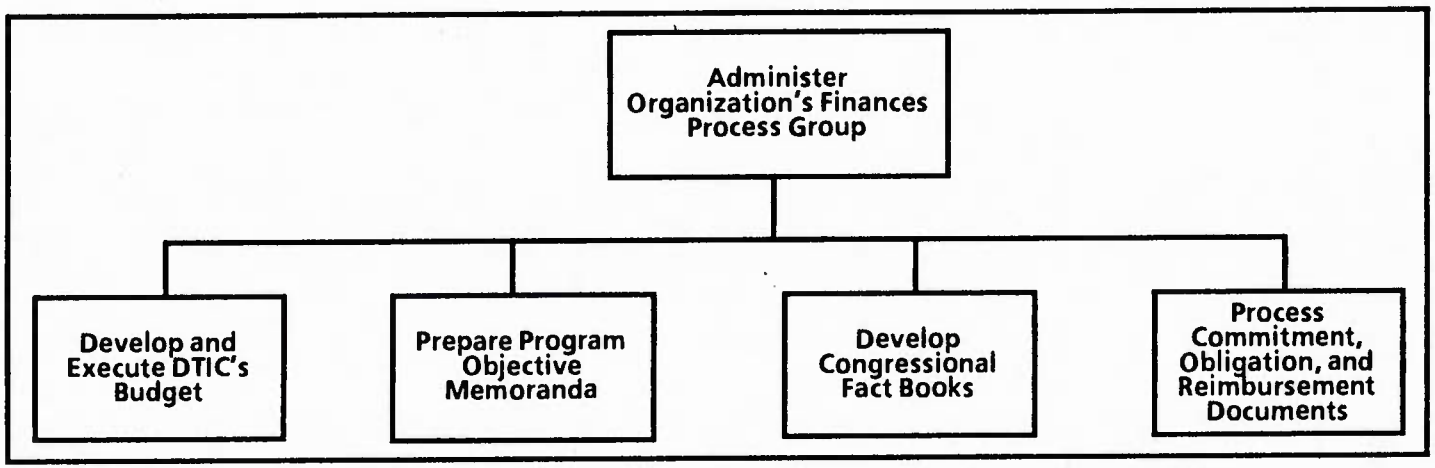
Administer The Organization's Finances Process Group

The Financial Management Branch of the Office of Policy, Plans, and Resource Management (1) develops and executes DTIC's budget, (2) prepares Program Objectives Memoranda (POMs), (3) develops Congressional Fact Books, and (4) processes commitment, obligation, and reimbursement documents. These processes are illustrated in Figure 3-22 and summarized below.

Develop and Execute the Defense Technical Information Center's Budgets

The Financial Management Branch sends a letter with a form to all DTIC Directors for submitting their directorate or office budget needs. This Branch compiles and consolidates the individual directorate/office budgetary data on an IBM PC utilizing Lotus Corporation's Lotus 1-2-3 program. This is a preliminary DTIC budget. They compile a final budget after numerous reviews with the Administrator and directors and submit it to Headquarters, DLA. They also maintain a monthly "checkbook" for each directorate and office as a means for each director to monitor his/her portion of the budget. This Branch performs other financial activities such as monitoring the ADP budgets and performing a midyear financial review.

FIGURE 3-22. ADMINISTER THE ORGANIZATION'S FINANCES PROCESS GROUP PROCESSES



Prepare Program Objectives Memoranda

The Financial Management Branch sends a letter to each DTIC Director with a baseline budget and forms to submit their requirements. They consolidate and review these with the Administrator. Using a spreadsheet they consolidate the requirements from all directors and set priorities. The final POMs are submitted to Headquarters, DLA.

Develop Congressional Fact Books

This Branch sends a letter containing the congressional fact sheets from the previous year to all the directors. The directors update the fact sheets and return them to the Financial Management Branch where they are consolidated and rewritten. The Branch submits 12 fact books to Headquarters, DLA, to be used as briefing books when DLA presents DTIC's budget requirements to Congress.

Process Commitment, Obligation, and Reimbursement Documents

This Branch processes numerous administrative forms that request, commit, obligate, and reimburse funds.

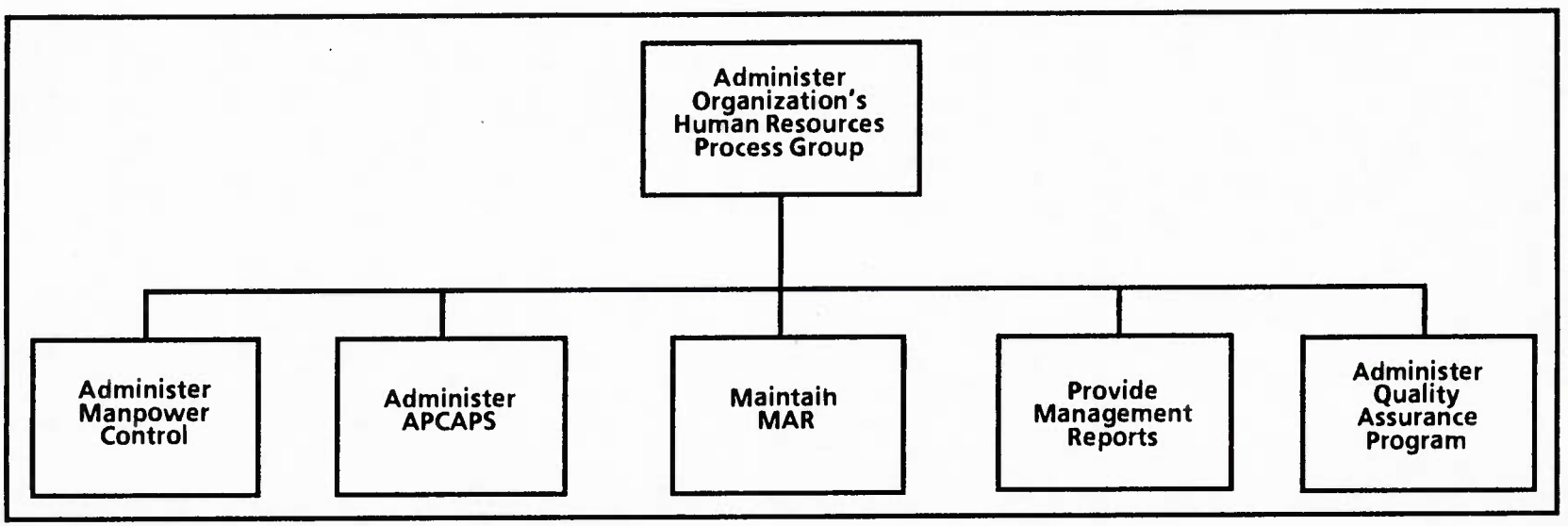
Administer The Organization's Human Resources Process Group

Administering DTIC's human resources includes five processes: (1) administer manpower control, (2) administer the Automated Payroll Cost and Personnel System (APCAPS), (3) maintain the Master Account Record (MAR), (4) produce management reports, and (5) administer the quality assurance program. The Management Engineering Branch of the Office of Policy, Plans, and Resource Management performs these processes in addition to administering the work simplification program, the DIMES studies, and the commercial activities program. These processes are illustrated in Figure 3-23 and summarized below.

Administer Manpower Control

The Management Engineering Branch provides input data to the Automated Personnel Manpower Database (on the Sperry 1160 computer) from Notification of

FIGURE 3-23. ADMINISTER THE ORGANIZATION'S HUMAN RESOURCES PROCESS GROUP PROCESSES



Personnel Action (Forms SF-52) and produces a monthly list of DTIC personnel on the DTIC 9700 printer. It also enters information to the Manpower Personnel Control List to authorize, on a biweekly basis, incumbents to personnel spaces. The resultant listing is received from the DASC. A monthly status of the SF-52s is maintained.

Administer Automated Payroll Cost and Personnel System

The APCAPS is operated by DASC, and DTIC enters data using Four-Phase terminals. Labor exception reporting and workload reporting are performed through APCAPS. The directorates provide the Management Engineering Branch with weekly input cards showing the hours worked and workload; the Branch then verifies the codes against the MAR and inputs them. Among the numerous reports received from the APCAPS System, one shows detailed manhours for specific subsidiary cost codes.

Maintain the Master Account Record

The DTIC Resourcing and Accounting Handbook (DTIC 7000.1) prescribes the official five-digit DLA cost codes used to identify and report financial and budgetary transactions within DTIC. The remaining four digits are assigned by the Management Engineering Branch for productivity reporting. The MAR is the basic record used to validate transactions in all of the subsystems of APCAPS, and output records and forms use codes and titles built in the MAR. Thus, it is extremely important that the MAR be built correctly and maintained on a continuous basis. The Management Engineering Branch updates the DTIC codes as required and makes corresponding adjustments to the MAR. The MAR is reviewed continually.

Produce Management Reports

The Summary Management Data Report (SMDR) is produced on a monthly basis and contains summary management data on the 12 categories of management activities. Four daily management reports are produced: (1) the Daily Executive

Summary, (2) the Technical Report Input Announcement and Subscription Status Report, (3) the Daily Production Report, and (4) the Demand Technical Report Daily Production Report.

The detailed reports used to produce these summary reports are given in the Monitor STI Processing Productivity process earlier in this chapter.

Administer the Quality Assurance Program

DTIC publishes three manuals: DTICM 4155.1, "Quality Assurance Program"; DTICH 4155.1, "Quality Assurance Standards"; and DTICH 4155.2, "ADP Standards and Procedures." These manuals provide policies and procedures to ensure desired levels of quality in DTIC's products and services.

Perform Public Relations And Marketing Activities Process Group

The Office of User Services performs public relations and marketing activities for DTIC by preparing conferences, writing speeches, marketing, and publishing promotional materials, and are illustrated in Figure 3-24.

Prepare Conferences

The Office of User Services organizes annual and regional conferences for DTIC and its community. The annual fall DTIC Users Conference is held in Washington, D.C. and the six regional conferences are held at various locations throughout the United States.

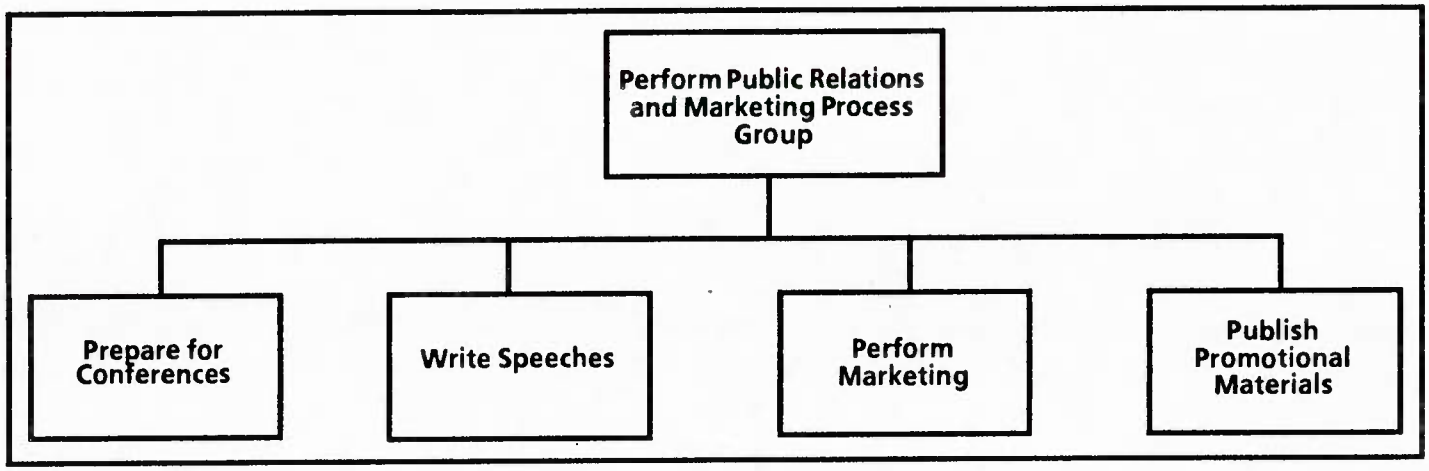
Write Speeches

The DTIC Administrator and Directors make presentations and give speeches on various topics of the STI program to numerous DoD audiences. A full-time speech writer writes the initial draft of speeches, reviews them with the speaker, and develops the final speech.

Perform Marketing

The objectives of this business function is to develop additional promotional materials; increase understanding of DTIC's mission, services, and products in the

FIGURE 3-24. PERFORM PUBLIC RELATIONS AND MARKETING PROCESS GROUP PROCESSES



DoD Community; and gather and analyze user feedback. The Office of User Services develops, distributes, and collects surveys. Exhibitions are set up and manned at conferences oriented toward library and information services. They offer tours of DTIC's Headquarter facilities to the public.

Publish Promotional Materials

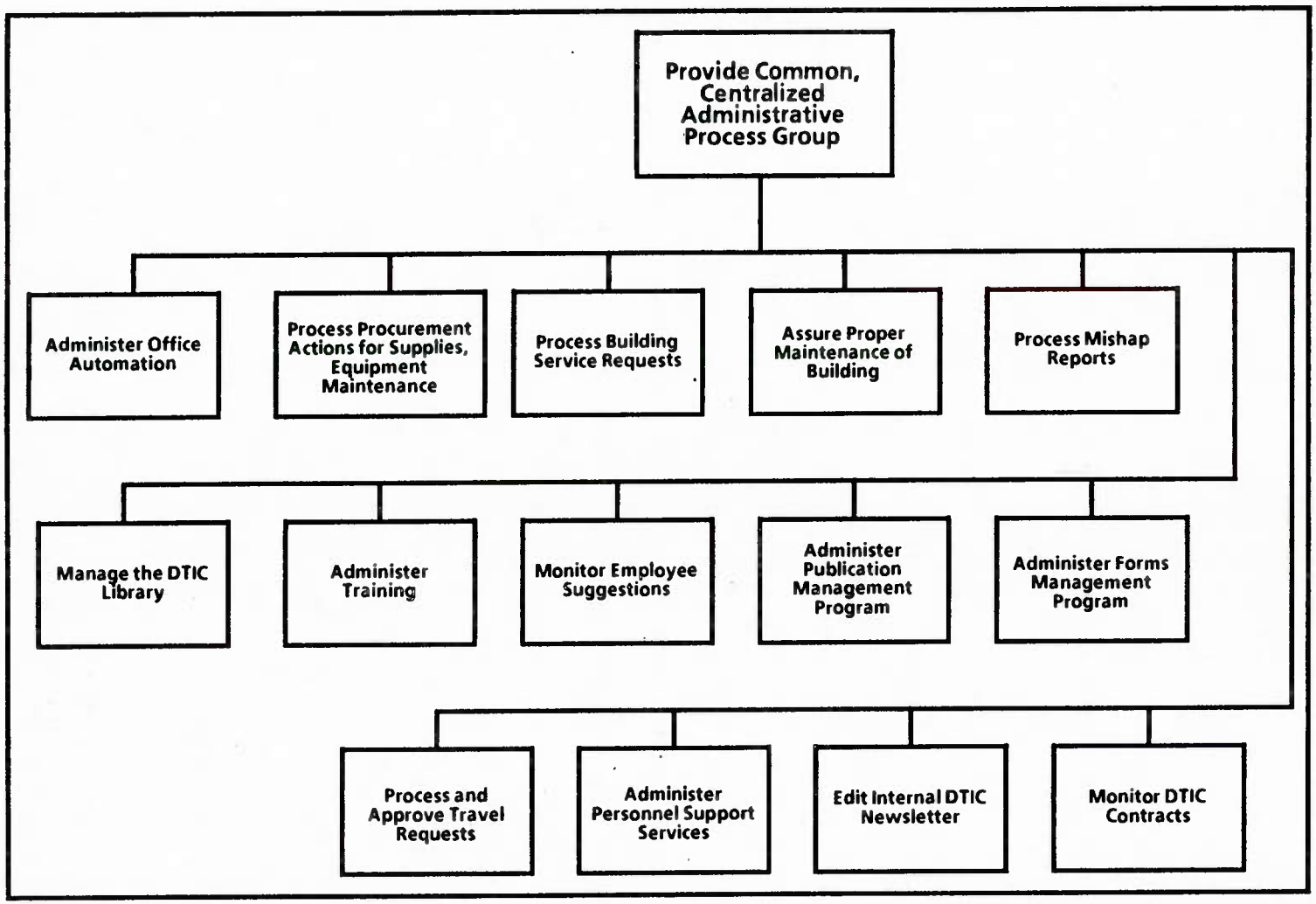
Numerous publications help people understand DTIC's purposes, services, and products, for example the "Handbook for Users of the Defense Technical Information Center." This office writes and distributes these promotional materials.

Provide Common, Centralized Administrative Support Process Group

The Office of Installation Services performs many processes including coordinate office automation efforts, process procurement actions for supplies and equipment, process building service requests, assure proper maintenance of building, process mishap reports, manage the DTIC Technical Library, administer training, monitor employee suggestions, administer publications management program, administer forms management program, process and approve travel requests, administer personnel support services, edit internal DTIC newsletter, and monitor DTIC contracts. That Office has developed a set of standard operating procedures describing detailed procedures which are similar in format and scope to the SOPs required of the directorates and coordinated by the Office of Policy, Plans, and Resource Management. Standing operating procedures are different from SOPs in that they are not required.

These processes are listed on Figure 3-25 and summarized below. There are additional miscellaneous functions including coordinating the awards program, administering the correspondence management program, and conducting space utilization reviews.

FIGURE 3-25. PROVIDE COMMON, CENTRALIZED ADMINISTRATIVE SUPPORT PROCESS GROUP PROCESSES



Administer Office Automation Efforts

The Office of Installation Services is DTIC's site coordinator for the Distributed Minicomputer Systems for Management Information Systems and End User Computing (DMINS/EUC). They published a preliminary Automation Management Plan describing the policies and procedures by which DTIC will manage and coordinate DMINS in June 1985 and it is being updated.

Process Procurement Actions for Supplies, Equipment, and Equipment Maintenance

Requests for supplies not stocked in DTIC's supply room are made on DLA Forms 1304 and 1312 by all of the directorates and offices and forwarded to the Office of Installation Services. The request is hand-carried to the Office of Policy, Plans, and Resource Management for a fund citation. After funding, a copy of the supply request goes to DASC-WS and another copy is filed in a suspense file. When the request is filled, the suspense file copy of the request is discarded.

Requests for equipment are handled in the same way as requests for supplies. However, certain equipment such as nonstandard typewriters, printing plant equipment, or non-ADP equipment, costing in excess of $30,000 require approval from DLA-W. An equipment request of this nature from a DTIC organization must be accompanied with a memo requesting approval to purchase from DLA-W. When approval is received from DLA-W, the equipment request is hand-carried to the Office of Policy, Plans, and Resource Management for a fund citation. After funding, a copy of the supply request goes to DASC-WS and another copy is filed in a suspense file. When the request is filled, the suspense file copy of the request is discarded.

Process Building Service Requests

Requests for repair or oiling of furniture is made on DTIC Form 437, Repair of Equipment or Furniture, by the directorates and offices and submitted to DTIC-W.

If the item in question cannot be repaired within DTIC, it is sent out for renovation or replacement.

Building service requests for minor repairs are followed up on within 10 days. Requests that are not completed and require work orders (work orders are required for all work over 40 hours) are followed up for status and estimated completion time within 180 days.

Assure Proper Maintenance of Building

The DTIC-W Custodial Work Inspector reviews custodial or janitorial services and completes DTIC Form 402, Checklist for Nonperformance of Custodial Services, when appropriate. The DTIC Form is delivered to DASC-WB for performance of the requested work. When work has not been completed after 10 days, an inter-office memorandum (IOM) is prepared requesting completion of the work. A second follow-up IOM is written after 1 week at which point the Director of DTIC-W is contacted for the next course of action. Weekly contact is made with the Military District of Washington representative concerning nonperformance of custodial duties.

Process Mishap Reports

The Office of Installation Services processes the following mishap reports: (1) DLA Form 1591 – Mishap Report, (2) Form CA-16 – Request for Examination and/or Treatment, (3) Form CA-1 – Federal Employee's Notice of Traumatic Injury and Claim for Continuation of Pay/Compensation, and (4) Forms HFCA 1500/ OWCP/1500A – Health Insurance Claim Form.

Manage the Defense Technical Information Center Technical Library

A 29-page standing operating procedure describes the activities necessary to operate and manage DTIC's Technical Library. These procedures cover such areas as procurement of technical materials and journals, acquisition of books, accepting gifts to the library, performing searches for technical citations, tracking withdrawals, and maintaining an inventory of library items.

Administer Training

A ten-part DD Form 1556 – Request, Authorization, Agreement, Certification of Training, and Reimbursement serves as the major vehicle for managing and coordinating the activities required to administer training of DTIC personnel by non-DTIC personnel.

Processing the training form (DD Form 1556) and scheduling training takes 6 weeks. The Office of Installation Services checks forms for correctness and records them by the employee's name, office, course title, dates, and cost. This Office ensures funding, availability of course and course sponsor, and space for the employee to take the course. All training fees are paid regardless of employee attendance unless the training is canceled according to guidelines agreed upon with the course vendor.

Monitor Employee Suggestions

The Office of Installation Services is responsible for the DTIC Suggestion Evaluation Process, including tracking the employee suggestion for feedback from the appropriate Office of Primary Interest to which the suggestion applies, submitting the suggestion to each member of the DTIC Suggestion Evaluation Review Panel, and carrying out the recommendation of the panel which includes securing a check for payment for the suggestion.

Administer Publications Management Program

The Office Of Installation Services serves as DTIC's Organization Requirements Clerk. They maintain distribution records for all regulatory publications received by DTIC and coordinate requests for such publications. DTIC Form 357, Publications Requirements, is maintained listing each directorate and office receiving copies of new DoD/DLA/DTIC regulatory publications.

The DTIC Administrative Library is maintained by DTIC-W and contains: (1) DoD Directives, Instructions, and Manuals, (2) DLA/DASC/DTIC Regulations, (3) DASC/DTIC Supplements to Defense Logistics Agency Regulations (DLARs),

(4) DLA/DASC/DTIC Manuals and Handbooks, (5) DTIC Letters of Designation, (6) HQ DLA Bulletins, (7) Federal Acquisition Regulations (FARs), (8) Indexes of Air Force and Army Regulations, and (9) Miscellaneous DoD, DLA, and other publications having occasional reference value. Primary emphasis is placed on DLA/DASC/DTIC Regulations and these are filed by series number (DLAR 5025.13, DLA Regulatory Numbering System explains the series definitions).

DTIC-W's standing operating procedures further describe how to make changes to DTIC regulatory publications, to safekeeping pertinent publications at an alternate site in the event of destruction of regulatory materials at HQ DTIC, and performing an annual review of DTIC's regulatory publications to ensure accuracy and current status.

Administer Forms Management Program

DLA Form 97, Request for Approval of Form, is sent to DTIC-W to create or revise a DTIC form. The DTIC-W forms manager reviews the request and drafts a form according to guidance contained in Records and Information Handbook: Forms Analysis and Design published by GSA.

DTIC-W maintains a stock in the supply room of DTIC, DLA, DoD, and other forms that are used by most DTIC organizations. The stock for forms used by one DTIC organization is usually retained by that DTIC organization.

Process and Approve Travel Requests

Travel orders are sent to DTIC-W. The DTIC-W authenticating official reviews and approves travel orders and affixes the official seal on the order. Travel orders are sent to DTIC-L to assure funds are available. A fund citation is put on the travel order. DTIC-W develops and implements travel policies.

Administer Personnel Support Services

This function is currently in DTIC-L and will be transferred to DTIC-W. It entails taking action to improve personnel services, documenting personnel prob-

lems, monitoring personnel actions, administering the training, suggestion, and awards program, marketing DTIC to potential employees, etc.

Edit Internal Defense Technical Information Center Newsletter

DTIC-W gathers information and articles from DTIC PSEs and develops a monthly newsletter. Articles include general information, latest developments in DTIC functional areas, and technical information.

Monitor Defense Technical Information Center Contracts

Conduct reviews of requests for proposals and contracts to ensure adequate justification and compliance with DLA, DoD, GSA, and other Government procurement regulations and advise DTIC organizations of resulting analyses.

CHAPTER 4. RECOMMENDATIONS FOR MODERNIZATION

INTRODUCTION

This chapter presents our recommendations on systems modernization to improve planning and control, improve productivity, and develop personal computer (PC) and/or Distributed Minicomputer System for Management Information System (DMINS) applications. These recommendations are a secondary objective to baseline description of support systems; thus, the scope of these recommendations is limited.

IMPROVE PLANNING AND CONTROL

Our two recommendations for planning and control of future DTIC development are:

- Develop techniques to formulate and manage the systems modernization plan
- Manage the implementation of microcomputers and DMINS.

The first recommendation addresses the modernization project itself and the second addresses applications on PCs and DMINS. In both cases, the recommendations have broader effects. The direction and control of DMINS and PCs must be a part of the modernization plan, and the techniques used for managing the modernization plan should be extended into all of DTIC's operations.

Develop And Manage Systems Modernization

A critical aspect of DTIC's systems modernization effort is the development of a plan for modernization and the careful management of DTIC's resources for meeting the objectives of that plan. Management of funding and the availability of automated data processing (ADP) staff are central factors in determining the pace and methodology of the modernization plan. Equally important is the development of a

process to determine and communicate the strategic direction and the specific priorities of the plan.

To develop the systems modernization plan, DTIC must determine the types of products and services it is to provide, strategic approaches to support those products and services (e.g., the ADP hardware/software configuration or document storage technology to be used), and the specific projects that must be undertaken to provide those products and services. The Office of Information Systems and Technology's "Tactical Plan for FYs 86, 87, and 88" includes descriptions of 30 projects that DTIC currently supports. The Directorate of Telecommunications and ADP Systems and other DTIC offices and directorates also support a number of modernization tasks.

These modernization projects should be incorporated into a single project plan. Proposed new projects should be evaluated for their impacts upon the plan and managed accordingly. This plan may call for the elimination of projects that overlap or that are not in accord with the strategic plan. Projects that are retained should then be assigned priorities and scheduled appropriately. Some desirable projects may not be scheduled in the plan because of inadequate resources; they should be held "below the funded line" until resources can be obtained.

Successful execution of the modernization project is dependent on the management process employed to develop and implement it. Historically, the Office of Policy, Plans, and Resource Management; the Office of Information Systems and Technology; the Directorate of Telecommunications and ADP Systems; and the directors as a group have all participated in project initiation and planning. The Office of Systems Modernization was recently established and should now be an important part of the project planning effort. The roles of each of these organizations should be defined, the planning process and the plan itself should be formalized, and the plan with its schedule and priorities should be published.

Development and management of the systems modernization plan and specific modernization projects require a thorough understanding of the resources that will be required. Quantitative estimates of required resources – funding, number and type of staff, equipment utilization, and any other relevant factors – should be included in the plan.

For the initial systems modernization planning effort, grouping, manipulating, and evaluating the effect that the total collection of proposed projects will have on DTIC resources will be a major factor in creating the project plan. Because of the magnitude of this DTIC effort, such a methodology can only be adequately developed with the aid of a computerized project management system. This system can become the central focus for modeling various alternatives for the initial plan, for understanding the impacts of future changes or additions, for publishing the plan, and for managing its progress. A variety of such systems exists for both mainframe and microcomputer-based computers.

This computerized project management system should incorporate and replace many of the manual management mechanisms such as program objective statements, Management by Objective (MBO) schedules, automation plan statements, project status reports, etc. The use of the system should also be exploited below the DTIC-wide organization level. In particular, the Directorate of Telecommunications and ADP Systems needs such a tool to manage its resources and projects. In that Directorate, the Systems Design and Development Division alone has more than 50 tasks.

Manage Microcomputer And Distributed Minicomputer System For Management Information System Implementations

DTIC has recently experienced an influx of IBM PCs, Apple MacIntosh PCs, and other microcomputers. An inventory taken in March 1986 lists 30 microcomputers at DTIC headquarters and another 16 at the Manpower and Training

Research Information System (MATRIS) Office. The inventory did not include the Sperry PCs now being installed, the Gould processors to come with DMINS, nor the Zenith computers to be provided to DTIC by DLA. DTIC has not centrally managed or supported many of these acquisitions, leaving management to the branch or section involved. The result is that in some DTIC elements a PC is used only as a word processor and others do not have any PCs. A more important result, however, is that some PCs are underutilized because no technical support is available to program them. DTIC should recruit staff members experienced in PC use to manage and support the PC, including providing applications development support.

A similar and related situation exists with DMINS and office automation. Interviews with the staff indicate unreasonable expectations about DMINS capabilities. Technical support is needed to implement and develop the office automation aspects of the system and to determine what other applications should be added. That support will be needed by users and by the Office of Installation Services, which will manage the DMINS project. PC and DMINS application development projects should be included in the modernization plan.

Finally, DTIC should consider the advantages of incorporating the PCs, minicomputers, and the mainframes into a coordinated network to the extent permitted by security.

PRODUCTIVITY IMPROVEMENTS

We have four recommendations to improve productivity at DTIC:

- The complex process involved in the Demand Document Order System should be reviewed for modernization.
- ADP systems should similarly be reviewed for modernization.
- Acquisition procedures should be further automated through modifications to the acquisition (AQ) data base.
- The Machine-Aided Indexing (MAI) post review process should be fully implemented.

The first two areas are the largest and most important. Our recommendations in those areas are general since the size and complexity of the issues precludes specific recommendations at this time. Further, detailed recommendations can only be made after strategic goals are evaluated. For example, many of the decisions on ADP system upgrades are dependent on whether the current mainframe is to be replaced in the next 5 years. Again, we iterate that all projects and alternatives should be evaluated before proceeding with specific ones.

Review The Demand Document Order System

A typical request for a paper copy Technical Report (TR) from DTIC's microfiche collection must flow through seven DTIC organizations; requests from the microfilm collection require even more steps. Since in FY85 nearly 340,000 documents were ordered through this process, it consumes the major part of DTIC resources and is highly visible to users.

Aside from the number of steps involved, other statistics indicate the need for a review of the process. The 11 June 1986 Daily Backlog Report lists 5,296 document order requests as requiring more than 10 days to fill; about half of these – some 2,500 orders – require reproducing paper copies from microfiche with the remainder requiring paper copies from microfilm. The conversion from microfilm to microfiche also represents a particularly complex effort. In 1983, DTIC's collection contained 465,000 rolls of microfilm; in the ensuing 3 years since the beginning of the conversion effort, only 30,000 – about 6 percent – have been converted.

The scope of this Baseline Report precluded the analysis necessary to provide specific recommendations for improvement; the effort, however, indicates the document order system should have a high priority in the modernization effort. The

following items are some of the issues that should be considered in a subsequent analysis:

- For microfilm conversions, DTIC should evaluate its current position, develop improvements in the conversion rate, and reduce the backlogs. DTIC should consider allowing a contractor to perform the conversions or dedicating DTIC staff to the effort independent of user requests. In dealing with current and future requests for microfilmed TRs, the user community should be made aware of the time required, and individual users should be advised when a specific order will be unduly delayed. One plan being considered by DTIC to eliminate the current backlog is to ask users with outstanding requests to reorder if they still wish the document. This plan is workable if DTIC can – in the future – satisfactorily process both those that are reordered and new requests.

- Conversion of the Request Processing (RP) system from a primarily batch-oriented system to an interactive online system would improve the operation in several areas: picking tickets could be produced instantaneously or several times a day rather than overnight; immediate validation of orders and proof-of-shipments would reduce the number of data entry errors. An interactive system would reduce the number of overnight multistep jobs and, therefore, reduce operational errors and costs. Fewer listings would be required; currently, one employee spends several hours a day reviewing more than 15 listings to ensure that the RP system ran properly the preceding night.

- No audit trail exists on the status of most orders from the time the picking ticket is generated until they are entered as a proof-of-shipment. By adopting a Production Control System, DTIC would improve customer complaint handling and provide more accurate status of the workload. Until new systems are in place, tools such as the Daily Backlog Report must be used both to identify and manage the problem.

- For several reasons, including difficulties in recruiting and supervising, DTIC has moved from three shifts to two and reduced the size of the second shift. Multiple shifts do not reduce the effort involved in processing orders, but do reduce the total time it takes to return the document to the user and should be continued to the extent possible.

- DTIC does not regularly grant requests for expedited processing or work with air-express courier services. DTIC should provide these services for a suitable surcharge as a visible indication to the users that DTIC is interested in customer service. One current form of expedited work is the Small Business Innovation Research (SBIR) processing. SBIR orders increased from 10,000 in FY85 to 15,000 in FY86; a similar increase in orders this year may substantially impact both SBIR and normal orders. Staffing or policy plans need to be developed for this workload.

- Formal quality control checks on outgoing documents should be instituted. If it is not possible to review all documents, they should be reviewed on a sampling basis.

- Longer term solutions to problems in the document order process include exploring electronic data storage systems, including compact disk, read only memory (CD-ROM) devices; those systems are currently projects within the Information Research and Technology Division. A shorter term alternative is the use of automated/mechanical equipment that will both store and retrieve microfiche.

Upgrade Automated Data Processing Support Systems

The Directorate of Telecommunications and ADP Systems also has several ongoing modernization projects, including conversions from keypunch to cathode ray tube (CRT) entry, conversion from assembly language code to Common Business Oriented Language (COBOL), and conversions from tape to disk storage. As with the Document Ordering Process, specific recommendations would be premature; thus, we propose only a few broad recommendations for consideration.

From an applications viewpoint, most of the current systems are batch-oriented [e.g., Master User Access and Contract (MUAC), RP, Input (aside from RTIS[1])]. These applications should be converted to online, interactive systems making use of database management system (DBMS) software that immediately edits, validates, and updates each transaction in mass storage. That conversion would improve the speed and accuracy of DTIC operations.

The use of such online, interactive systems would also improve the internal operations of the ADP staff. Many DBMS systems offer methodologies that simplify report generation and application (database) creation and modification. Use of a DBMS methodology would also reduce the number of batch jobs being run overnight (especially the number of complex multistep jobs) and the number of tapes being used. Centering programming operations around a few key systems will help unify the techniques and languages used to maintain the systems; that is currently a problem since more than one-half of DTIC's 500 plus programs are written in assembly

[1]Remote Terminal Input Subsystem.

language (and an even greater percentage of the programmer workload), while slightly less than one-half of the programmer staff uses assembly language.

Attention should also be given to internal ADP operations. Like that of many ADP organizations, the DTIC staff has sacrificed internal needs in favor of supporting the user. Many of the libraries (e.g., source code for programs, tapes, executive control language instructions) are kept as sequential files on mass storage or tape and are only updated in batch mode. Some programs are updated and tested online on DTIC ADPE Time-Sharing Service (DTSS), but much updating and testing is still done through keypunch cards and batch runs. DTIC is converting many jobs from the use of tapes to mass storage and increasing the density and blocking factors of the remaining tape files, however, much work is still needed in these areas. Other technical aspects such as using older techniques that no longer conform to Sperry standards for the structure of master files on tape and the use of field data formats also need to be addressed.

The DTSS System should be evaluated for termination. DTIC is not actively marketing it and there are few active users.

Regardless of the technical approaches taken for modernization, the resources must be carefully controlled and priorities set. As indicated in the first recommendation, the Directorate of Telecommunications and ADP Systems would greatly benefit from the use of an automated project management system.

Modify The Acquisition Database

In current acquisition procedures, data are entered into the database and then much of the same information is retyped as letters requesting documents or follow-up letters. Furthermore, the need to generate follow-up requests or to closeout requests that have not been responded to is determined by a manual review of database reports.

Significant savings would be accrued if initial requests were generated from data entered into the database and if follow-up requests and closeout requests were automatically generated based on the date of the initial request. Automation would be particularly useful since DTIC is increasing its acquisitions efforts. The database also contains data on DoD Components that have not responded to requests for TR submissions. Automated reports would indicate the DoD organizations with which DTIC needs to work to gain increased submission rates.

The AQ database is currently planned for incorporation into the replacement input system which will include these features. However, if these changes can be incorporated in a timely manner, the labor savings in Acquisitions will be worth the duplicate programming effort.

Modify Machine-Aided Indexing Post Review Processing

This recommendation addresses enhancing database quality. The MAI programs assist indexers of TR and management data. They are heuristic to the extent that the programs which isolate phrases and convert them to DTIC Retrieval Indexing Terminology (DRIT) posting terms are table-driven and can be modified based on feedback. However, the programs are not receiving that feedback because post review listings with the indexer modifications are not being submitted to the MAI staff. The staff does not have the expertise necessary to fully utilize the feedback even if it were submitted. The proposed replacement input system would provide such feedback automatically. However, in the interim, these listings should be manually reviewed both for program and post review indexing quality.

The management databases have historically received little or no post review. Recently, the Special Analysis Branch has been post reviewing some of the data and that post review is being entered into the system. To the extent possible the post review should be increased because the MAI programs were never intended to operate alone. For management data this problem is exacerbated by the fact that the

externally submitted narrative fields may exceed DTIC field lengths, and this results in possible truncation of both the text and the DRIT posting terms and the overlaying of other data. This problem is particularly significant in the independent research and development (IR&D) data. The field length should either be increased (a very large effort) or the narrative text edited to acceptable limits.

POTENTIAL PERSONAL COMPUTER AND/OR DISTRIBUTED MINICOMPUTER SYSTEM FOR MANAGEMENT INFORMATION SYSTEM APPLICATIONS

In the area of PCs and DMINS applications, we make two recommendations:

- DTIC should automate the monitoring of scientific and technical information (STI) productivity with the use of a PC and appropriate software
- DTIC should use a PC to automate the handling of classified mail receipts.

These two recommendations center around the development of applications that might be conveniently placed on a microcomputer. No distinction is made between stand-alone PCs or DMINS. In many cases, DMINS would be preferred since it is a shared system, but such factors as system load and short term availability for anything beyond word processing must be considered. Although the recommendations presented here mention only four specific applications, any of the numerous manual processes could benefit from microcomputer support. However, development of these applications is also heavily tied to our initial recommendations – that they should be incorporated into the overall plan and that applications development support, which is not readily available, should be provided.

Automate Monitoring Scientific And Technical Information Productivity (And Status)

This recommendation has two parts. The more immediate recommendation is that DTIC use a PC and software to accumulate, manipulate, summarize, and report on the currently collected productivity and status data rather than perform the task manually as it is now doing. That manual task has become so cumbersome that,

while data on productivity and status are still being collected these data are no longer being published on a daily basis. A computer-based approach would also offer an opportunity to review and evaluate the value of the data being collected. For example, the Daily Pipeline Reports measure the number of TRs that receive an AD number – those that are processed through descriptive cataloging. The daily report for the past few months seems to indicate a decrease in the number of TRs flowing through the pipeline because it does not account for the backlog of TRs in cataloging.

Numerous specific organizations are also interested in tracking and monitoring systems. The Retrieval Analysis Branch has acquired the hardware but has not developed software for a retrieval request tracking system. Modification of the MATRIS request tracking system might be a solution to this problem. The Printing Branch has also requested a system to track and schedule printing requests. This system could be combined with the development of a graphics capability subject to DLA agreement.

A more complete solution is the development of a full Production Control System. Development of such a system has been considered and approved by DTIC and is currently a project in the Office of Information Systems and Technology. Such a system could be used to track work and eliminate manual record keeping within DTIC's operations. One approach being considered is use of a light wand and bar code. This approach is a simple and effective means of tracking physical material. Automated systems can also be used to track the flow of data. For example, either the current or replacement input system could provide tracking/status information automatically based on the terminal and data being entered. Using either or both approaches in combination would provide management information in a variety of formats more quickly and less expensively than the current manual means.

Automate Handling Classified Mail Receipts

Classified mail is double-wrapped and sent with individual receipts for each item included. The user signs one copy of these receipts and returns it to DTIC where it is matched with another copy kept in a manual file. The closeout file is also manually kept as is the review and follow-up for nonreceived responses. This is a small, but important application that would be ideal for PC automation; alternatively, it should be incorporated as a continuation of the proof-of-shipment aspect of the RP system.

APPENDIX A

PROJECT BIBLIOGRAPHY

This appendix provides a list of printed material that was used in the preparation of this report. The material is organized into general subject categories and listed by report title within each category.

The following is a list of acronyms used in this appendix:

ADP – Automated Data Processing

ADPE – Automated Data Processing Equipment

COSATI – Committee on Scientific and Technical Information

DLAH – DLA Handbook

DROLS – Defense RDT&E On Line System

DTICH – DTIC Handbook

DTICM – DTIC Manual

IAC – Information Analysis Center

MATRIS – Manpower and Training Research Information System

RDT&E – Research, Development, Test, and Evaluation

R&E – Research and Engineering.

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APPENDIX B

INTERVIEWS

Interviews with the Defense Technical Information Center (DTIC) and Information Analysis Center (IAC) staff were conducted from December 1985 through June 1986. Information from interviews for the DTIC Replacement Input System was also used. These interviews were conducted from June through July 1985. Personnel interviewed at that time have as asterisk following their name.

Kurt Molholm, Administrator
Paul Robey, Deputy Administrator

Personal Staff

Patricia Gaynor
James Pendergast
Robert Rice – [Defense Logistics Agency – TO (DTIC)]
Benjamin Wright

Office of Policy, Plans, and Resource Management

Charles Crum
John Glynn
Joan Lewis
Robert McKalvia
R. Russell Paris
Rachel Tatum
Lynette Webber

Office of User Services

Lawrence Ames
Richard Balzarini
Randal Bergmann
Bernard Dennis
James DePersis
Carol Finney
Paul Klinefelter
Tom Lahr
Shirley Witges
Bob Wrenn

Office of Installation Services

Karen Cook
Kay Grigsby
Beverly Ruff

Office of Information Systems and Technology

Gladys Cotter
Richard Douglas
James Erwin
Barbara Everidge
Ellen McCauley

Directorate of Telecommunications and Automated Data Processing Systems

Richard Astrayka
Sterling Atchinson
Norma Ayala
Gary Claypoole
Wade Cook
Mary Lyn Gearhart
John Maguire
Carl Malm
Powhatan Moucure
Stephanie Powell
Gerald Schrader
Donald Stewart
Michael Sullivan
Edward Thorpe
David Williford

Directorate of Document Services

Donald Addison
Regina Atkins
Elaine Burress
Pearl Cary
Daniel Cicoria
John Crossin
Madeline Crumbacker*
Charlotte Fuller
Frank Greer*
Charles Gould
Elizabeth Hall*
Gilda Hall
Charles Hitt
Hazel Horton
Amy Hurd
Janice Jarus*
Janie Key
Annabel Kramer

---

*Conducted between 1 June 1985 and 31 July 1985 as a part of the Input System Analysis.

Dermot Lee
Richard Mathews*
Margaret Mullen
Harry Proctor*
Gertrude Rhedmon
John Roark
Newton Spillman
Mitchell White
Louis Williams

Directorate of Database Services

John Baldwin*
Winifred Bell*
Sarah Best*
Loretta Brown*
Thomasine Callahan*
E. DeChadenedes*
Edith Dotson*
Victor Furtado
Melvin Garrett*
Clarence Hill
Charles Jacobs
Thomas Jones
Barbara Lessor
Thomas Lin
Claudine Long*
Edna Mae Long*
Edward Man
Gwendolyn Marshall*
Alvin Miller*
Thelma Morgan*
Fuller Murfree
Ruby Perry
Roland Russell
Gretchen Schlag
Odelia Teaford*
Carlynn Thompson
William Thompson
Betty Weatherholtz*
Ledelle Wettengel
Florentine Willow*

Information Analysis Centers

DASIAC – Ed Martin, Dave Reitz
GACIAC – Richard Bartl*
MCIAC – Helen Pestel*
MMIAC – Sarah Ellingsworth, Christine Gallery, Louis Gonzalez
MTIAC – Gloria Price*
SURVIAC – John Vice*

---

*Conducted between 1 June 1985 and 31 July 1985 as a part of the Input System Analysis.

Manpower and Training Research Information System (MATRIS)

Lisa Benton
Roy Hyde
Linda Loughnane
Sarah Riegel
Lois Richards-Means
Barbara Tarker

APPENDIX C

PROCESS FLOWCHARTS

The following is a list of abbreviations and acronyms used in this appendix:

ADD	–	Automatic Document Distribution
ADP	–	Automated Data Processing
AQ	–	Acquisition Database
CRT	–	cathode ray tube
CSL	–	Contributor Summary Listing
DB	–	database
DROLS	–	Defense RDT&E On Line System
DTIC	–	Defense Technical Information Center
DTIC-Z	–	Directorate of Telecommunications and ADP Systems
DUPE	–	duplicate
FDAC	–	Selection Section
FDRA	–	Reference Section
FDRB	–	Registration and Services Section
FMF	–	Microfiche Maintenance and Reproduction Branch
FMM	–	Master Microform Processing Branch
FMP	–	Paper Copy Processing Branch
FMQ	–	Office of Quality Assurance
FPRB	–	Lithographic Section
FPRC	–	Bindery Section
FPS	–	Receiving and Distribution Branch
HAR	–	Retrieval Analysis Branch
HAS	–	Special Analysis Branch
HDB	–	Bibliographic Database Branch
HDS	–	Database Support Branch
IR&D	–	Independent Research and Development

MAI	–	Machine-Aided Indexing
MINIMAD	–	Miniature Master AD File
MUAC	–	Master User Access and Contract
NTIS	–	National Technical Information System
POS	–	proof-of-shipment
RDT&E	–	Research, Development, Test, and Evaluation
RP	–	Request Processing
RTIS	–	Remote Terminal Input System
SBIN	–	Shared Bibliographic Input Network
TAB	–	Technical Abstract Bulletin
TR	–	Technical Report
WUIS	–	Work Unit Information System
X-REF	–	cross-reference
ZDD	–	Systems Design Branch
ZOC	–	Production Control Branch

FIGURE C-1. FLOWCHART SYMBOL DEFINITION

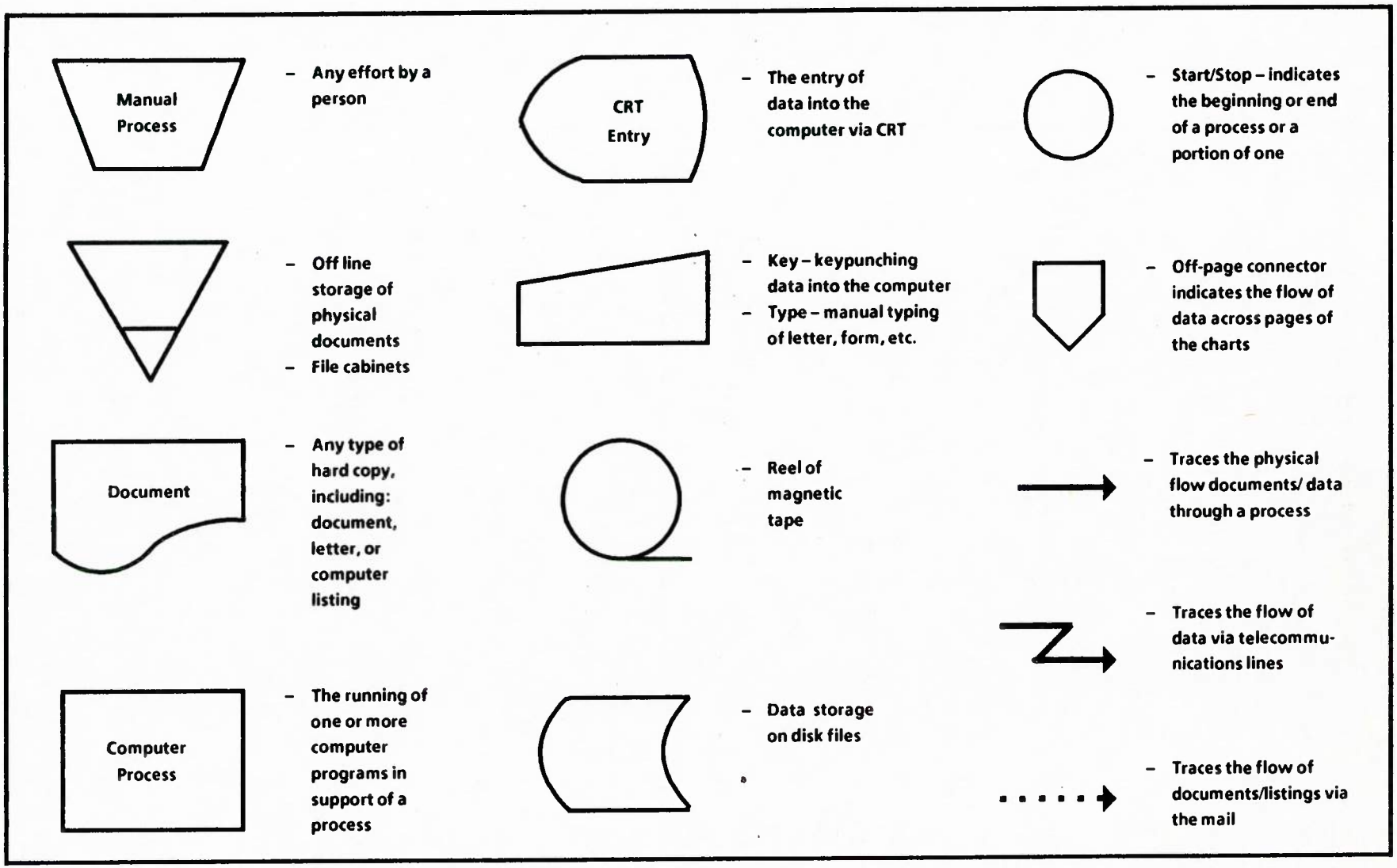


FIGURE C-2. ACQUIRE TRs FLOWCHART – CONTACT PROCESSING

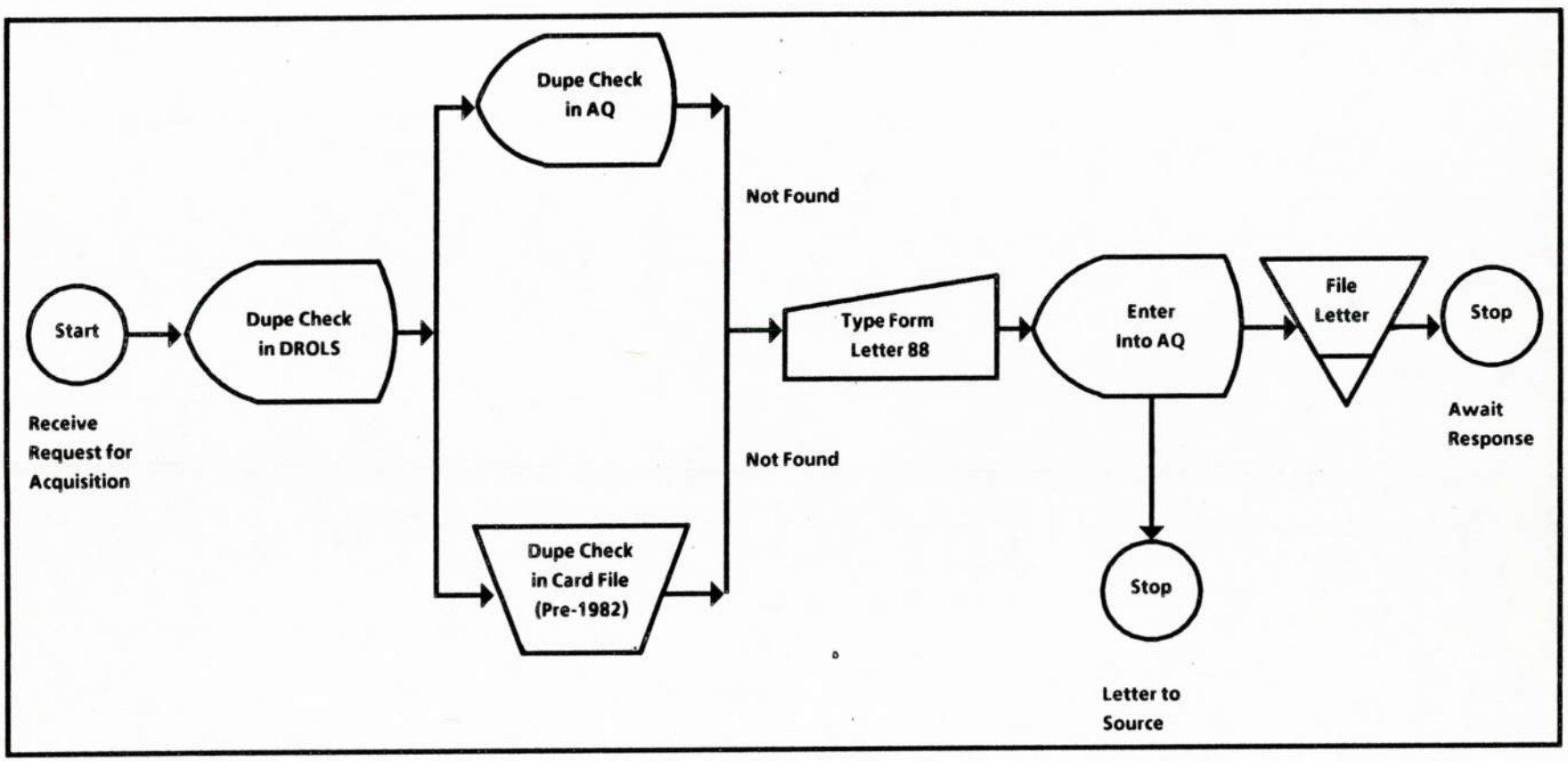


FIGURE C-2. ACQUIRE TRs FLOWCHART – RESPONSE PROCESSING (Continued)

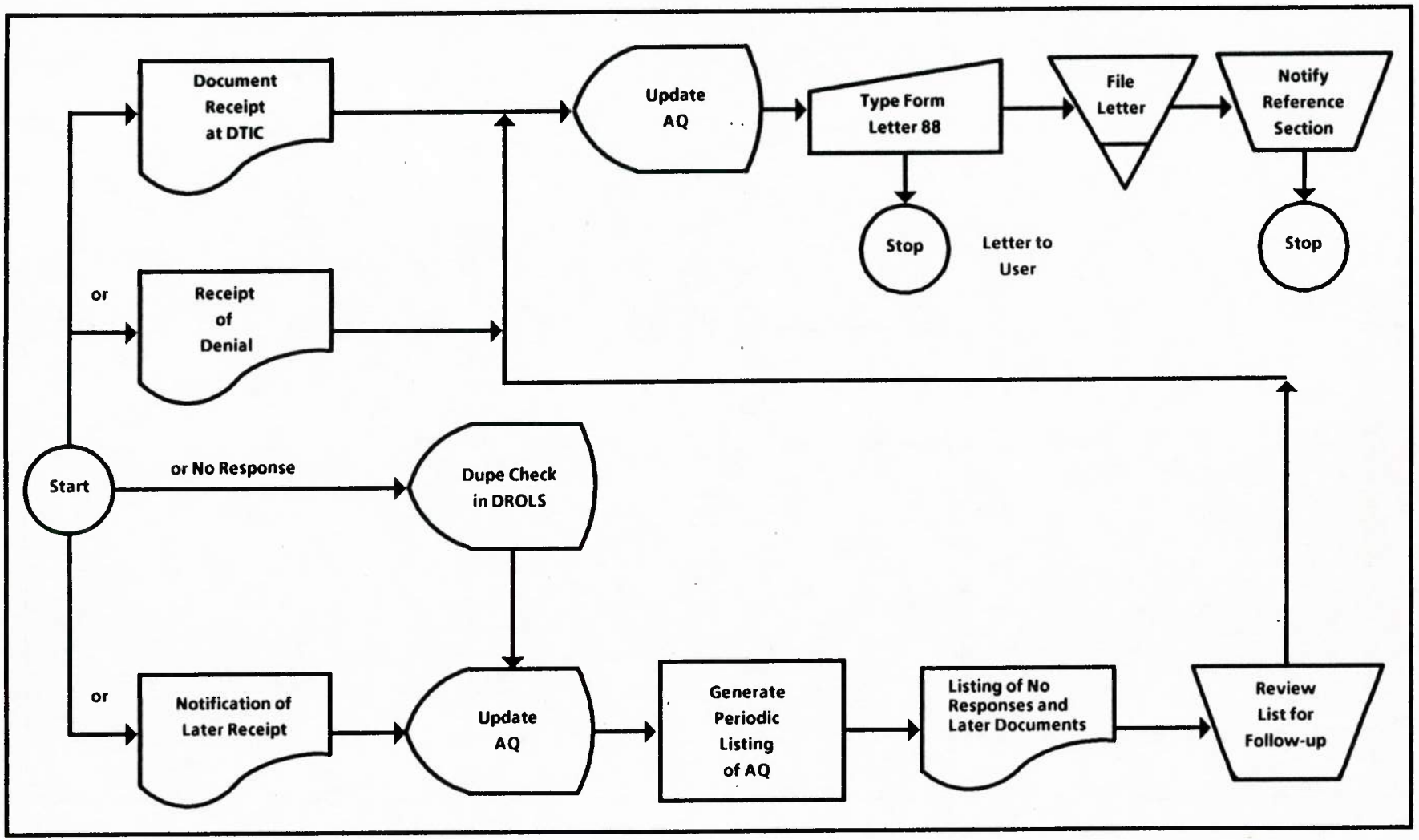


FIGURE C-3. STORE TRs FLOWCHART

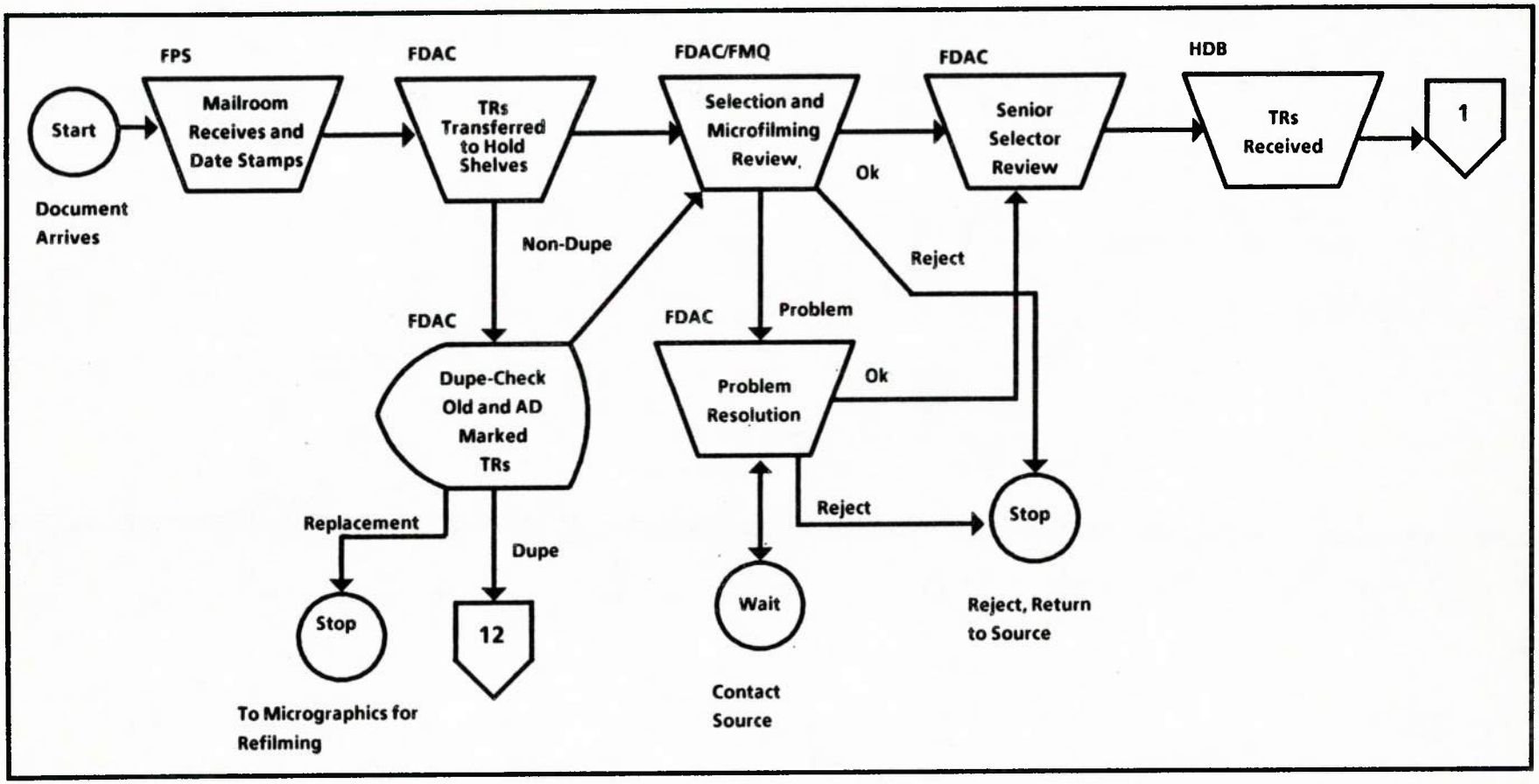


FIGURE C-3. STORE TRs FLOWCHART (Continued)

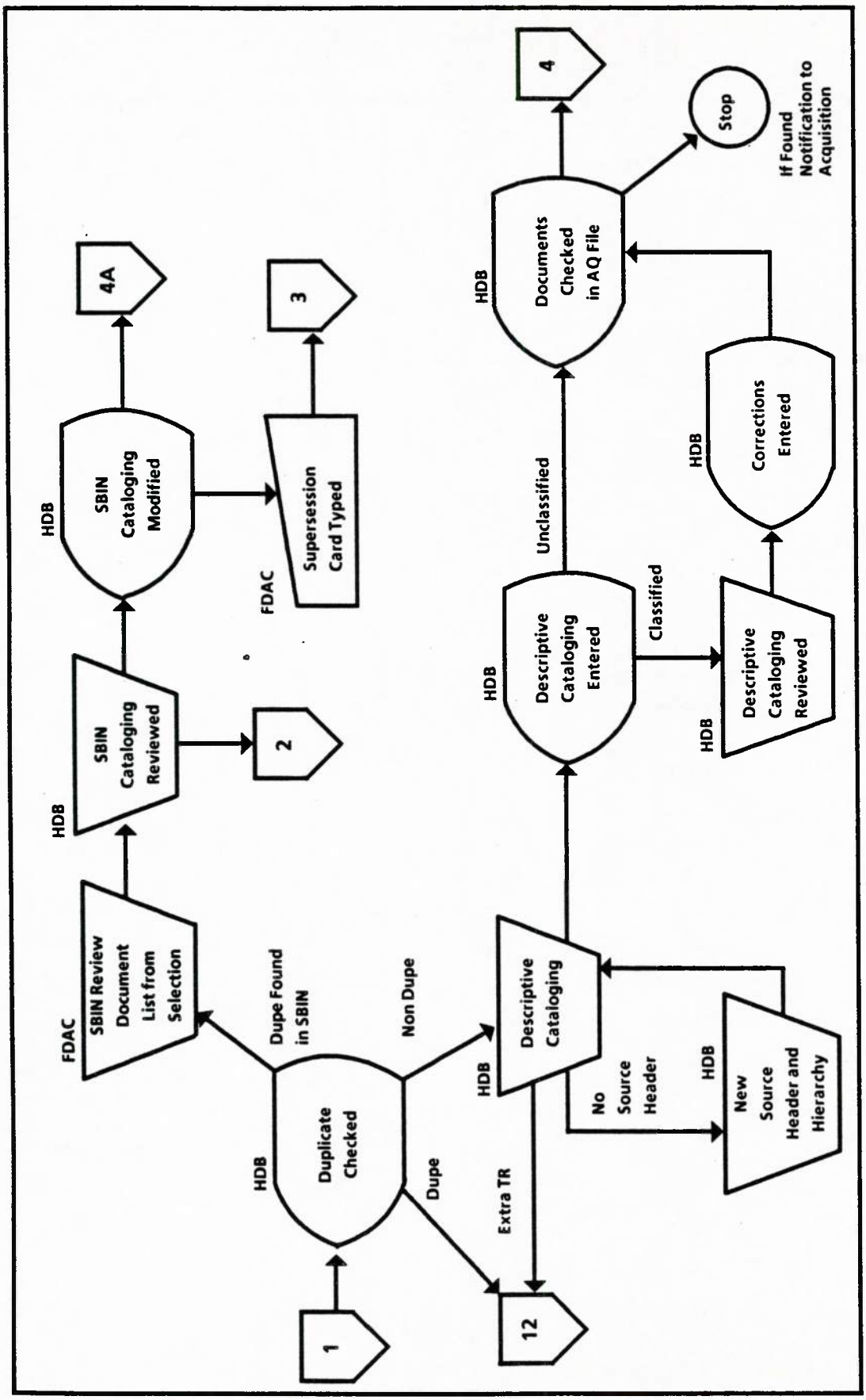


FIGURE C-3. STORE TRs FLOWCHART (Continued)

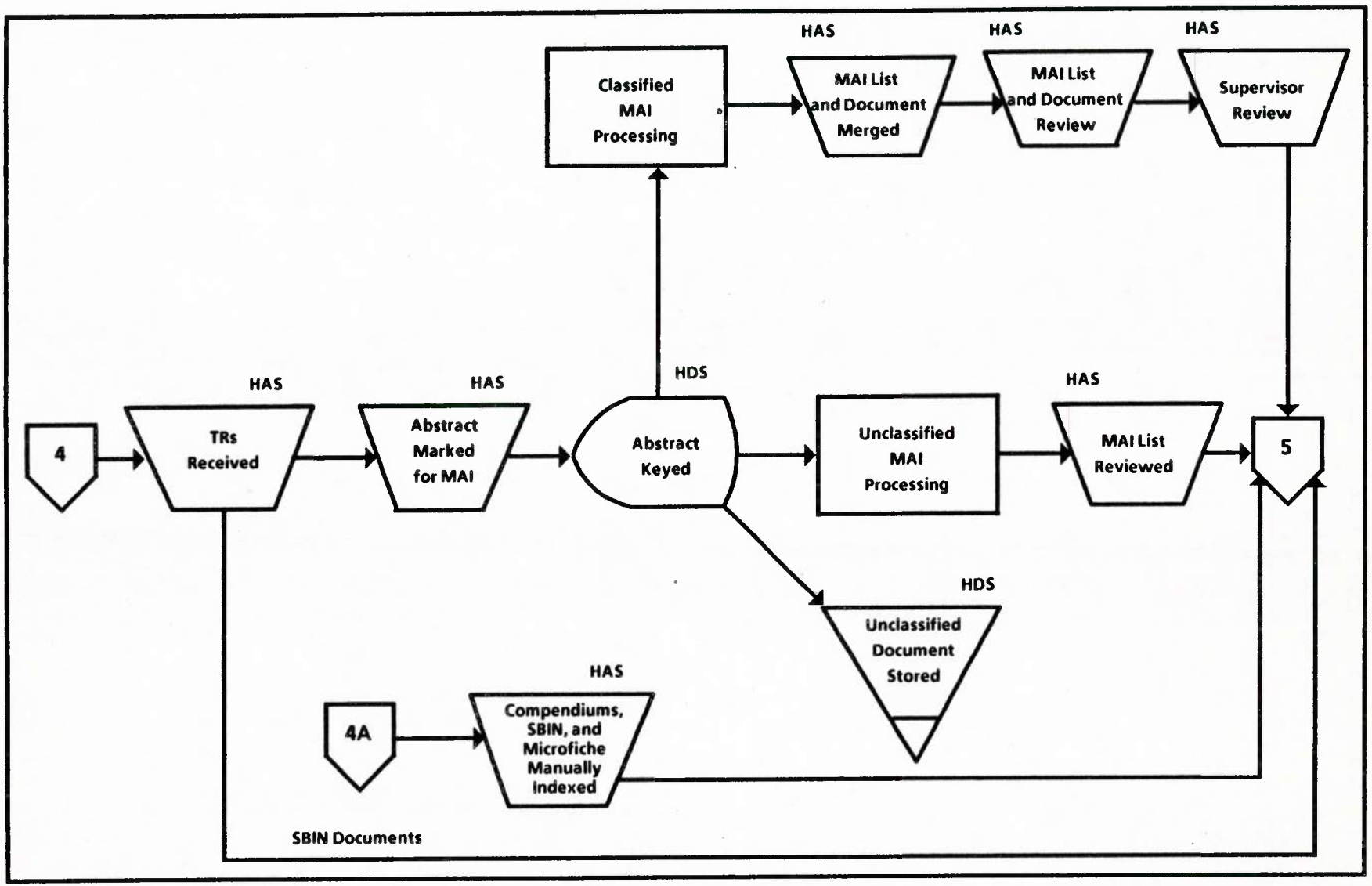


FIGURE C-3. STORE TRs FLOWCHART (Continued)

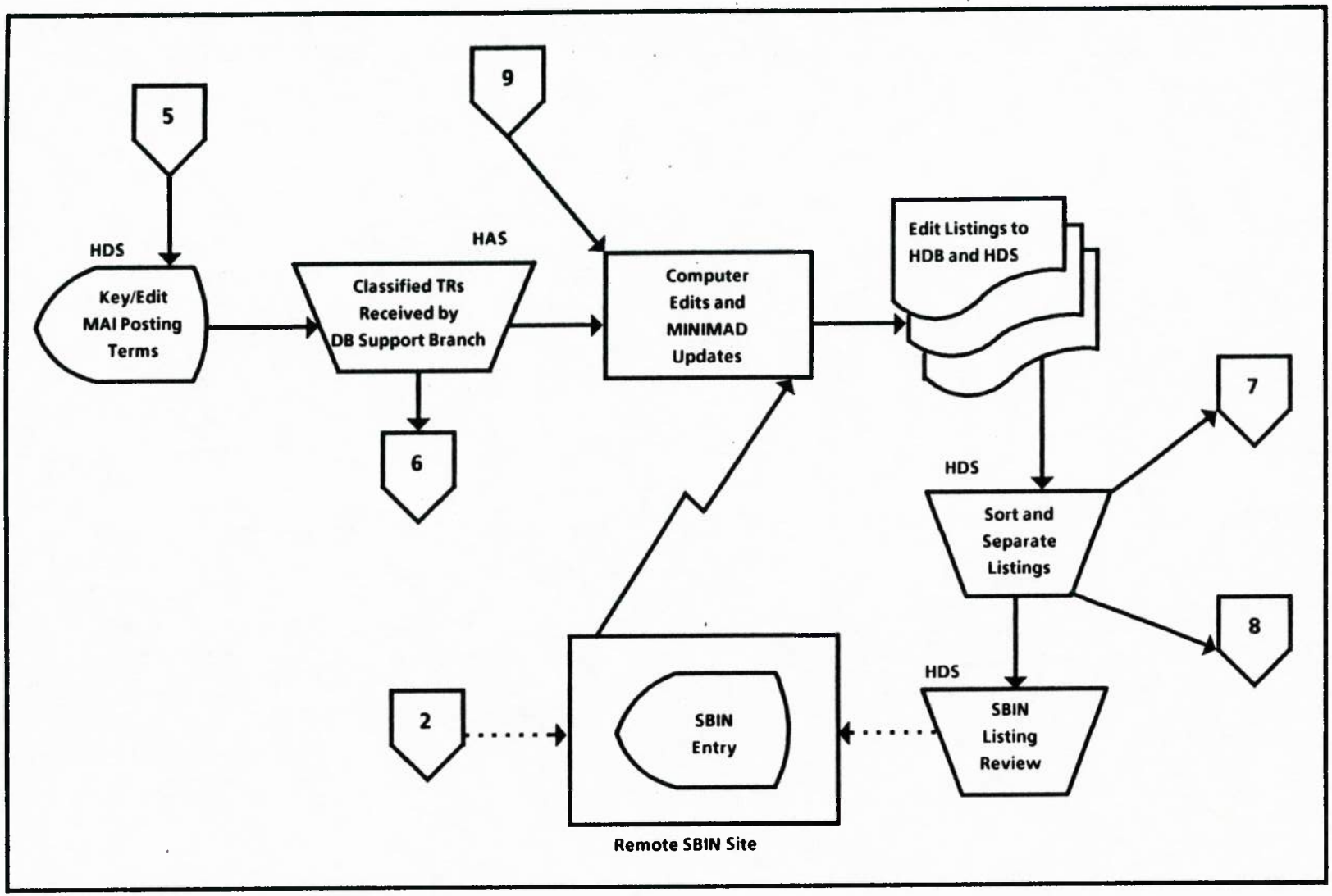


FIGURE C-3. STORE TRs FLOWCHART (Continued)

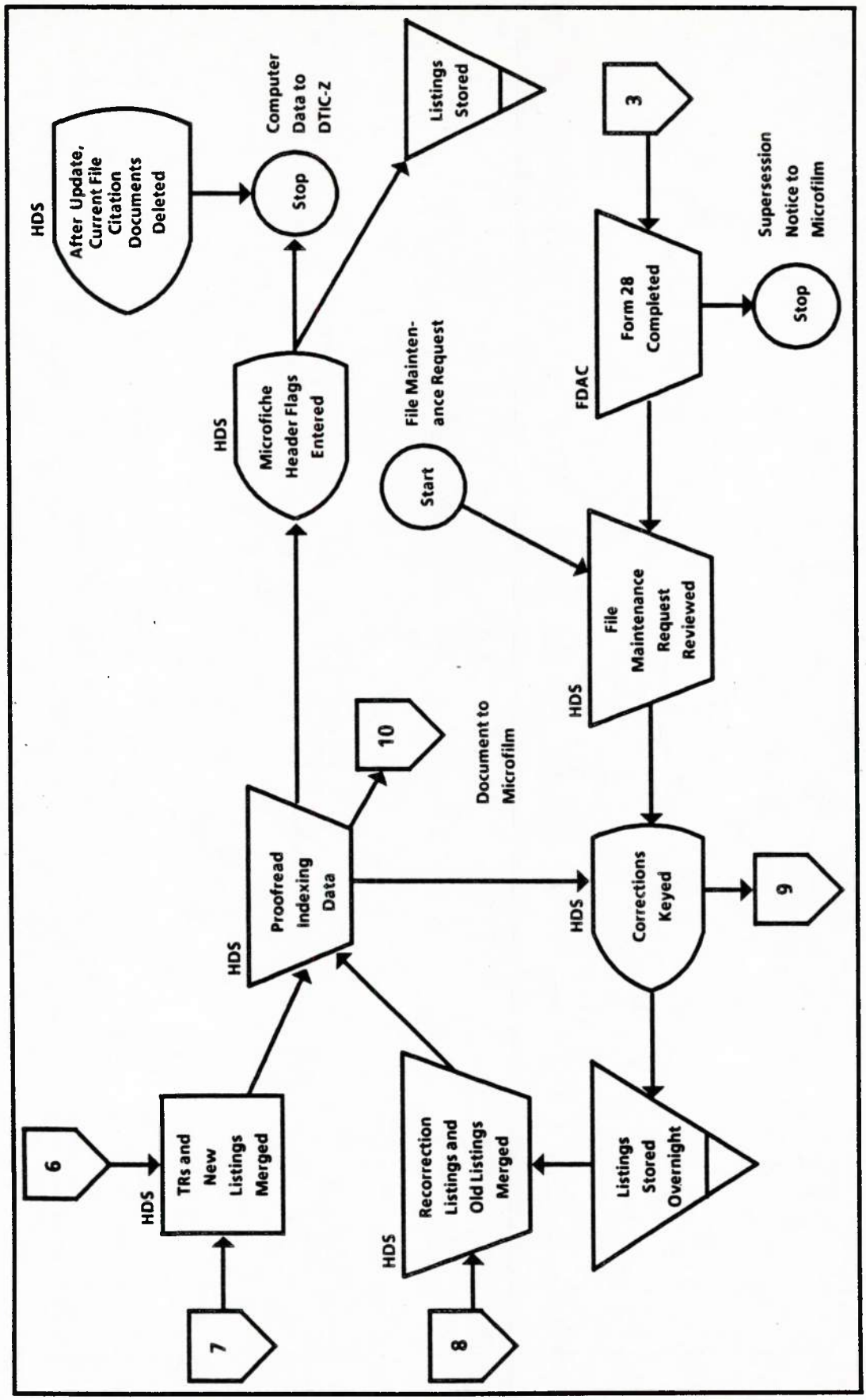
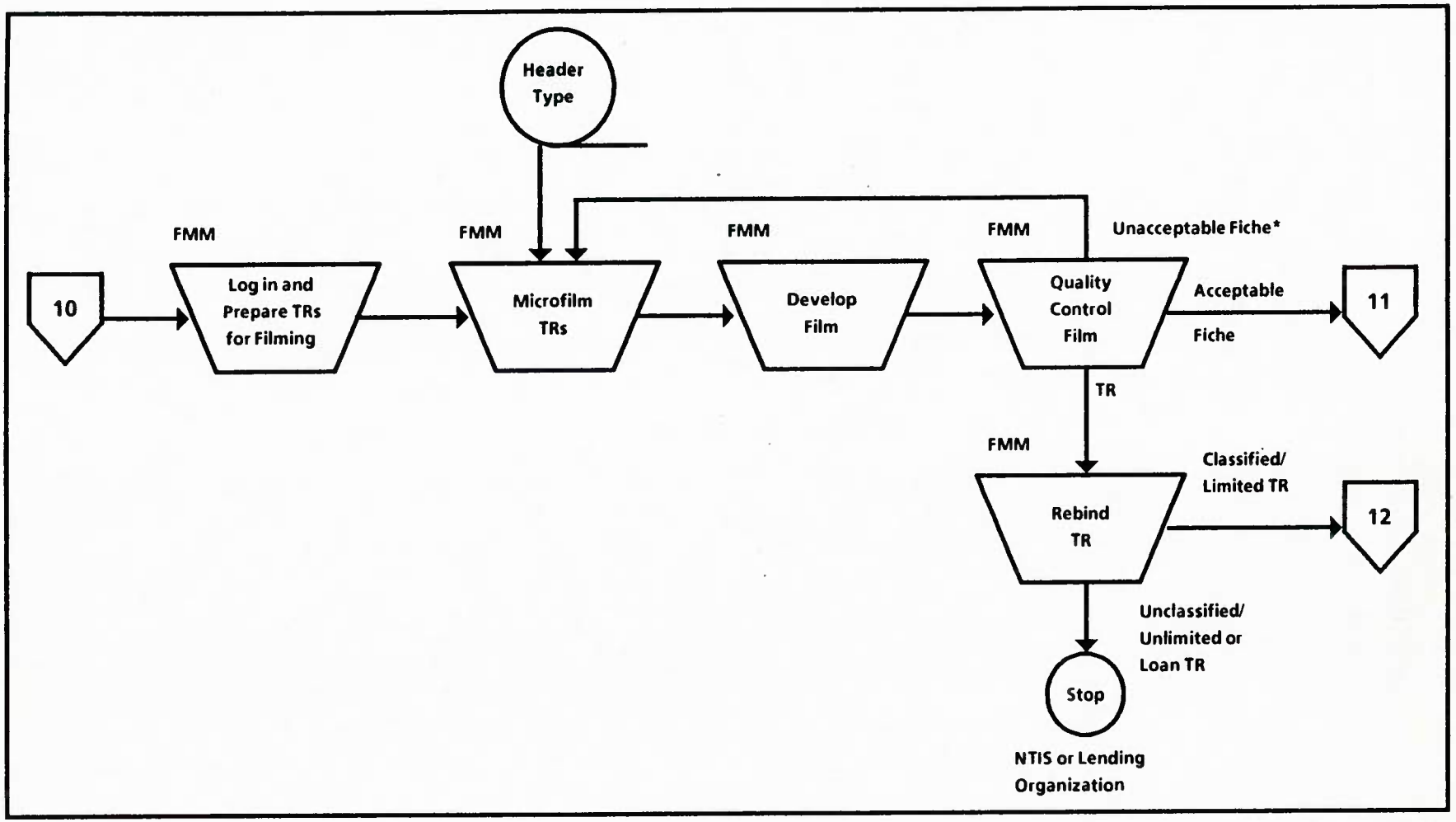
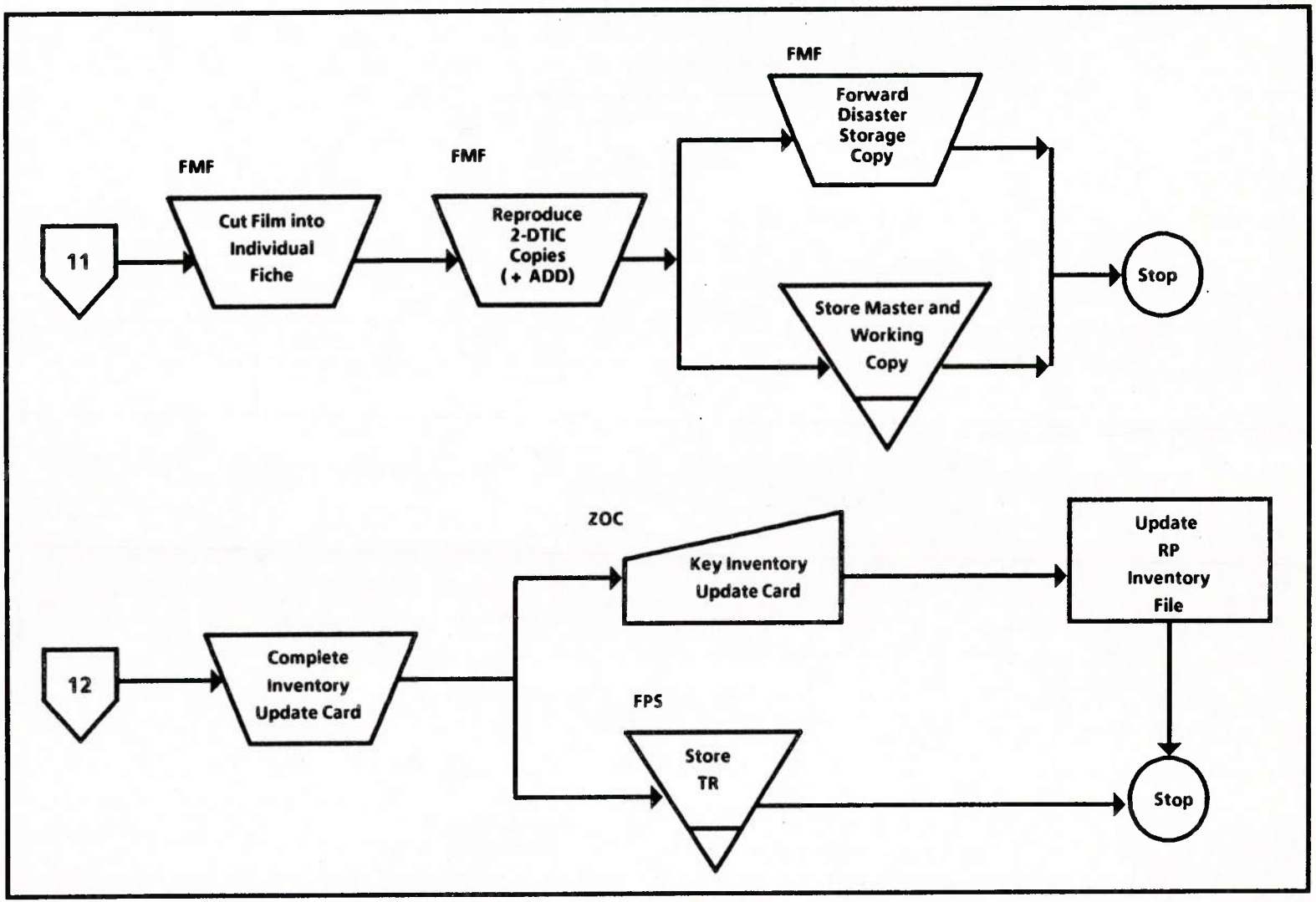


FIGURE C-3. STORE TRs FLOWCHART (Continued)



*After one attempt to refilm, either accept as reproducible as microfiche only, or reject and request a replacement TR through Selection Section.

FIGURE C-3. STORE TRs FLOWCHART (Continued)



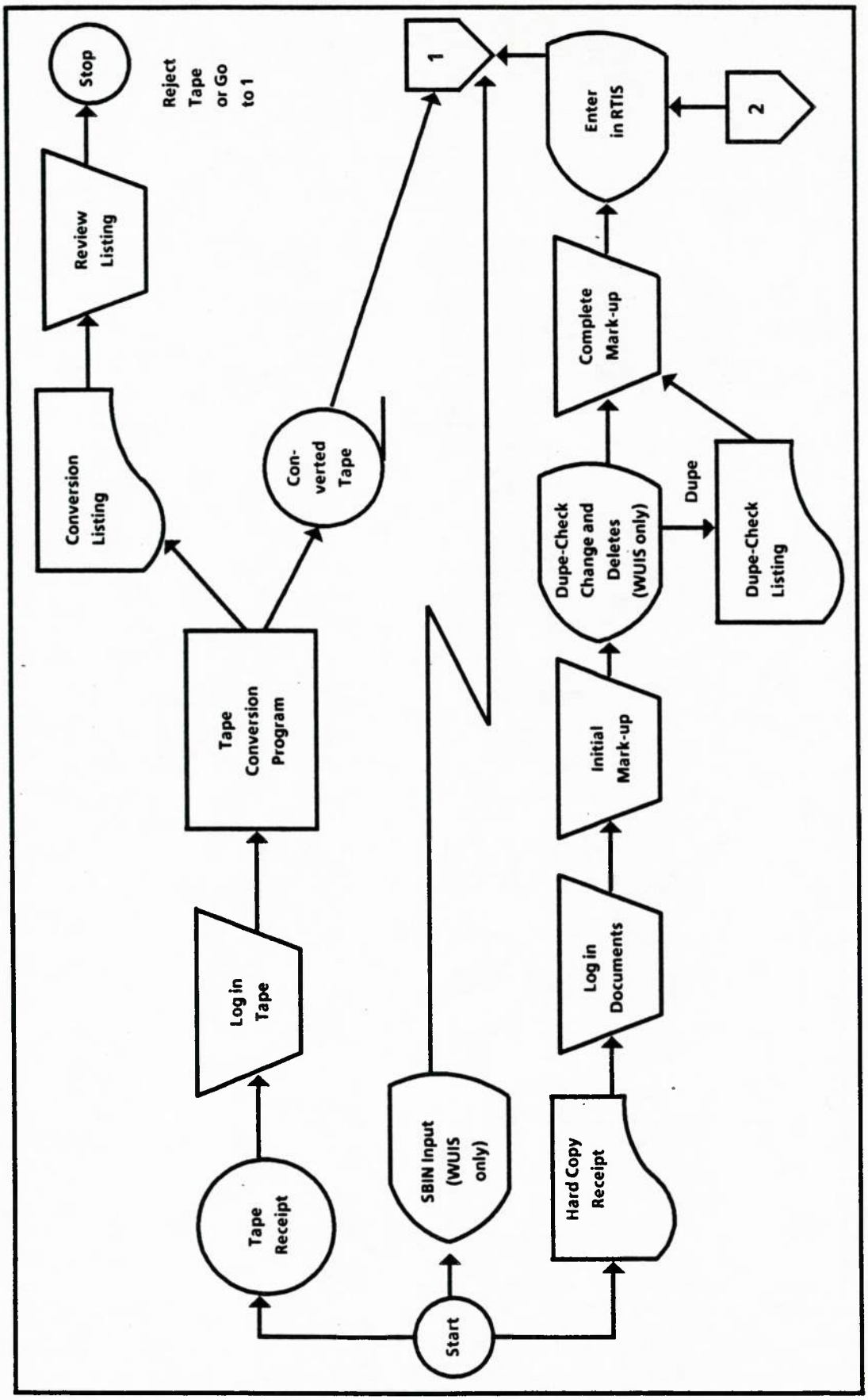
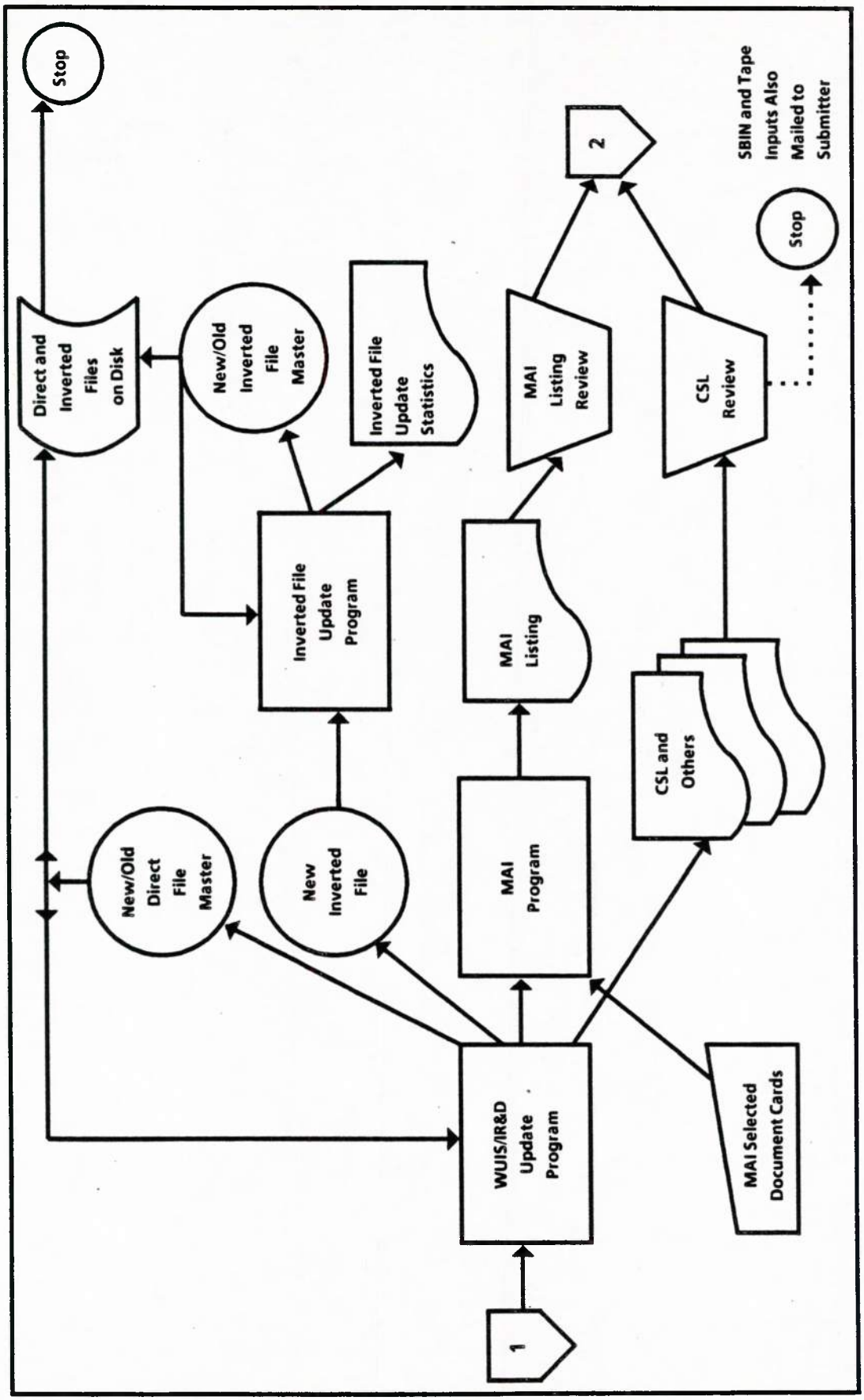


FIGURE C-4. STORE MANAGEMENT DATA FLOWCHART

FIGURE C-4. STORE MANAGEMENT DATA FLOWCHART (Continued)



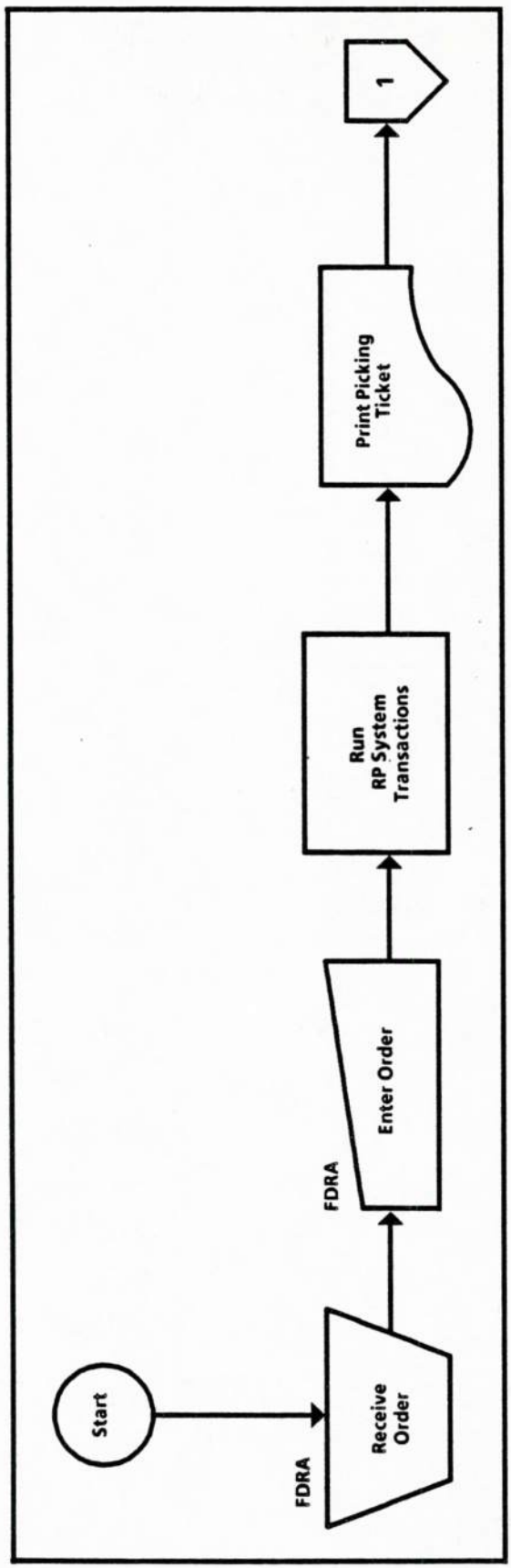


FIGURE C-5. DELIVER DEMAND ORDERS FLOWCHART

FIGURE C-5. DELIVER DEMAND ORDERS FLOWCHART (Continued)

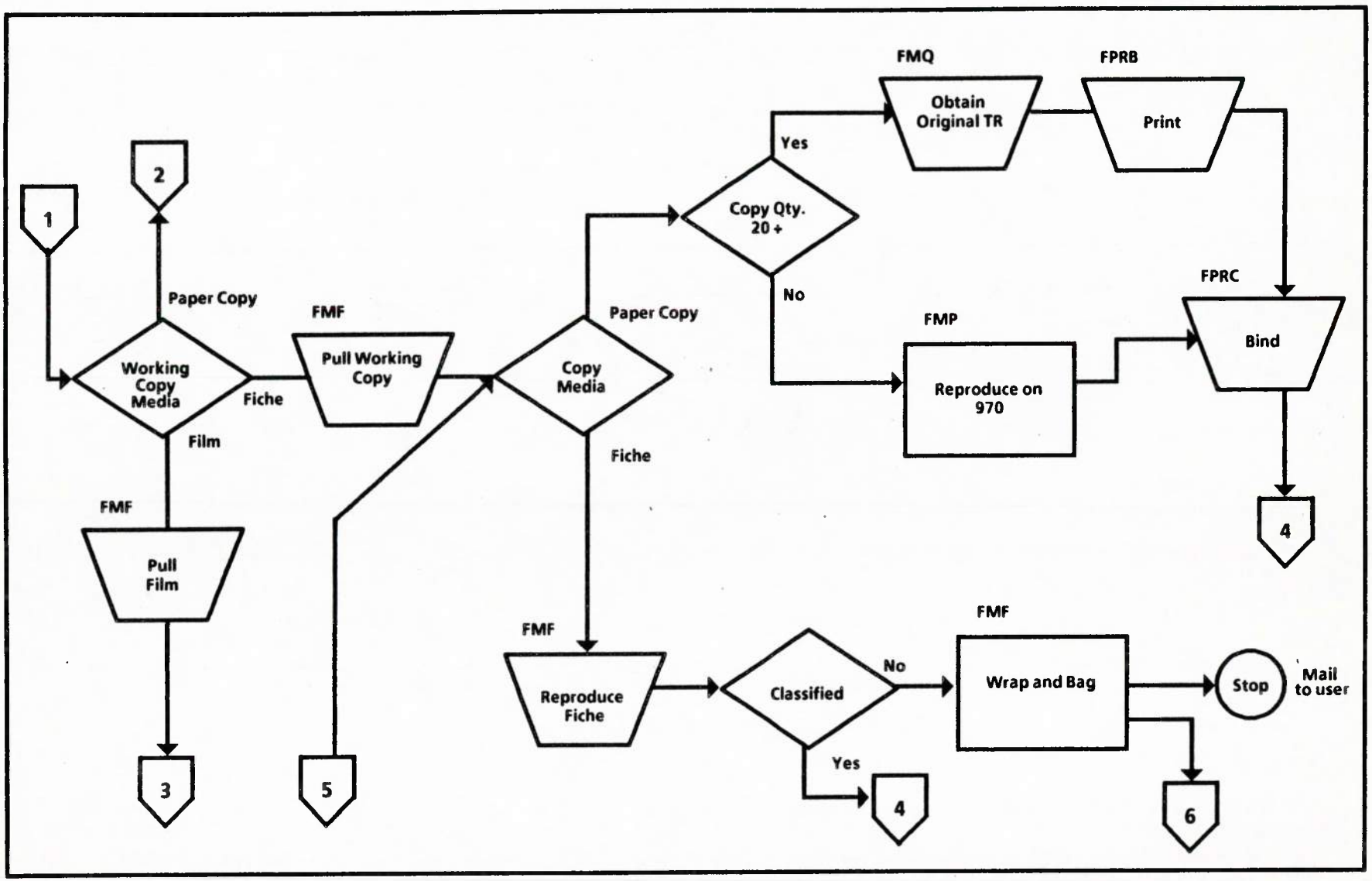


FIGURE C-5. DELIVER DEMAND ORDERS FLOWCHART (Continued)

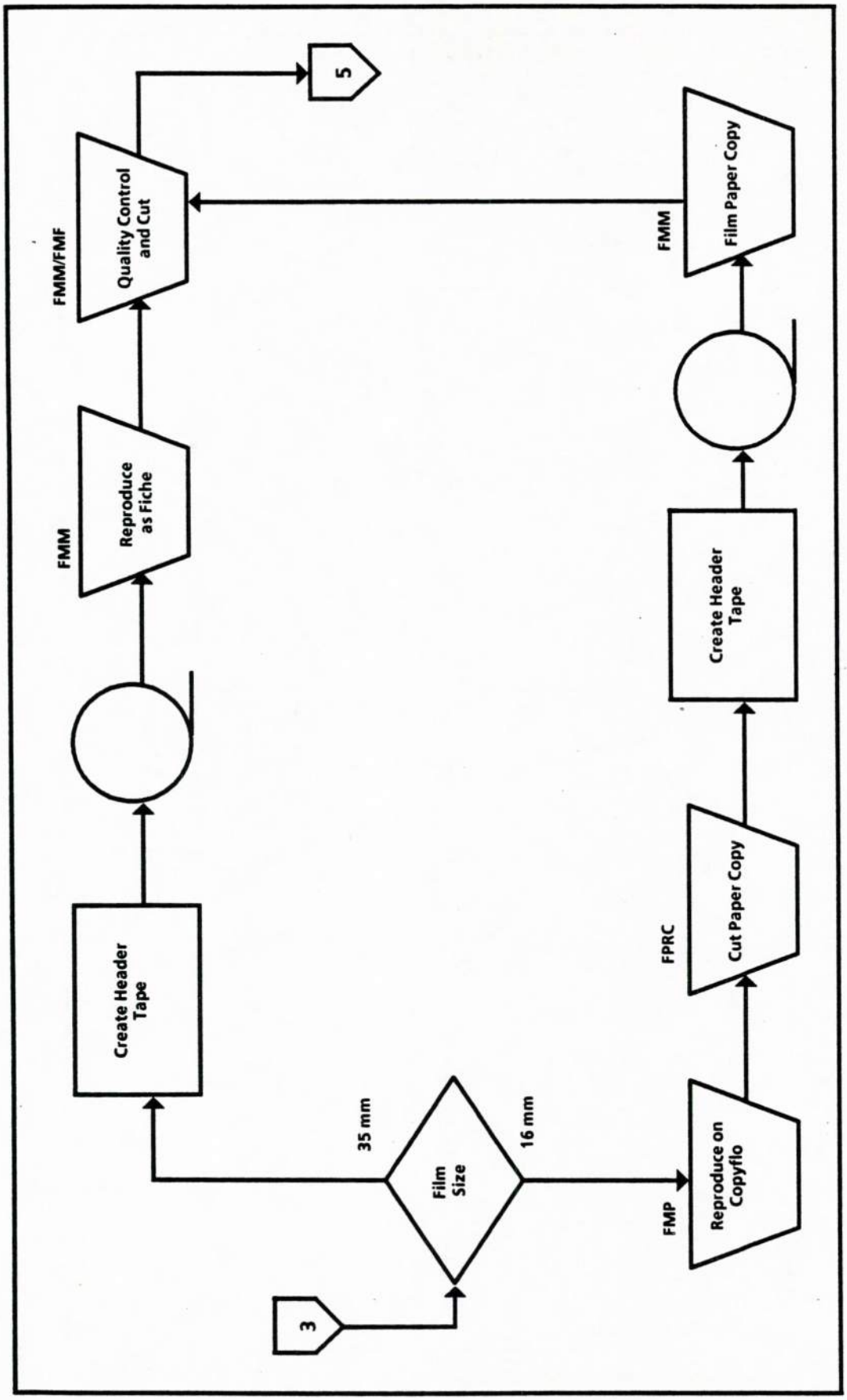
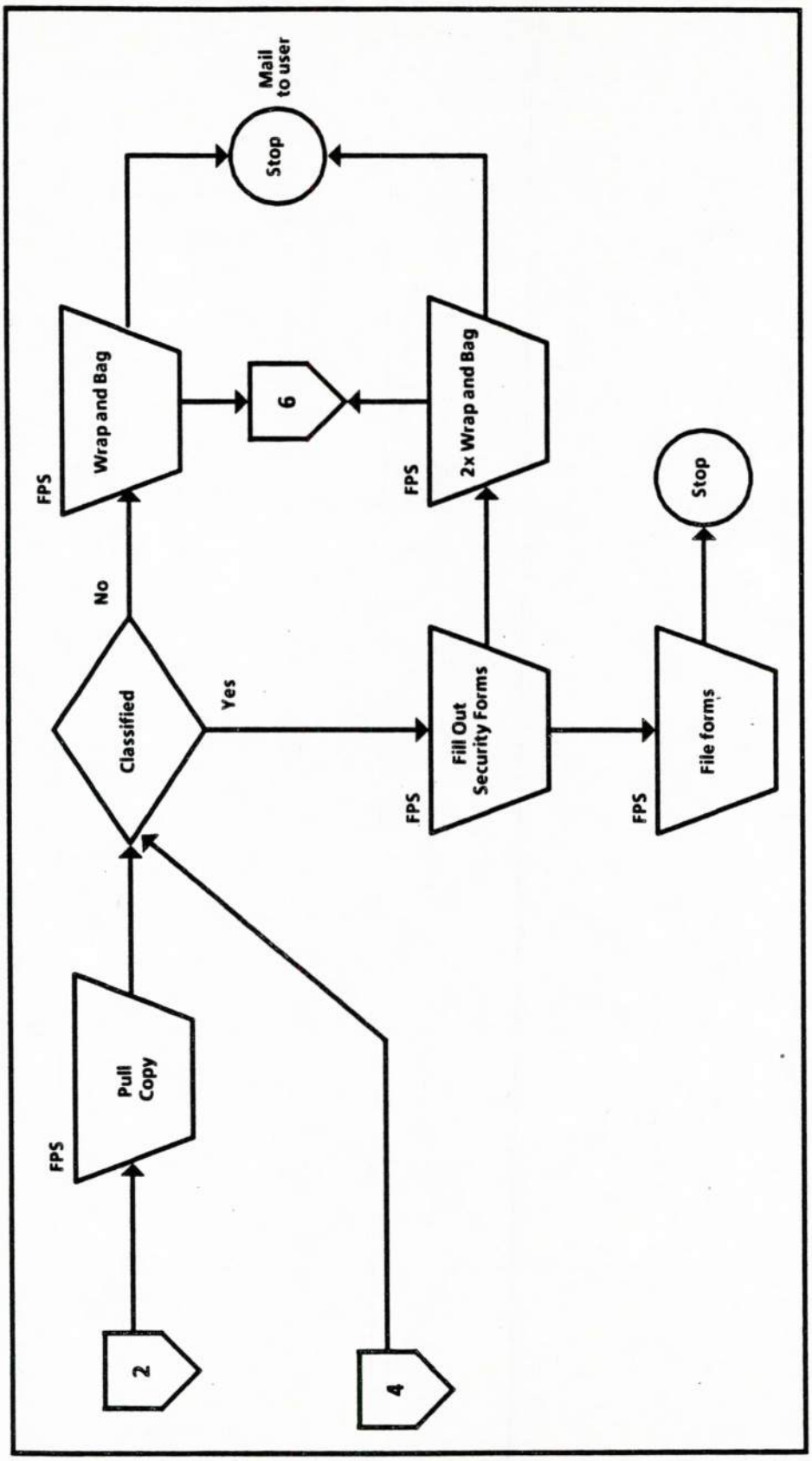


FIGURE C-5. DELIVER DEMAND ORDERS FLOWCHART (Continued)



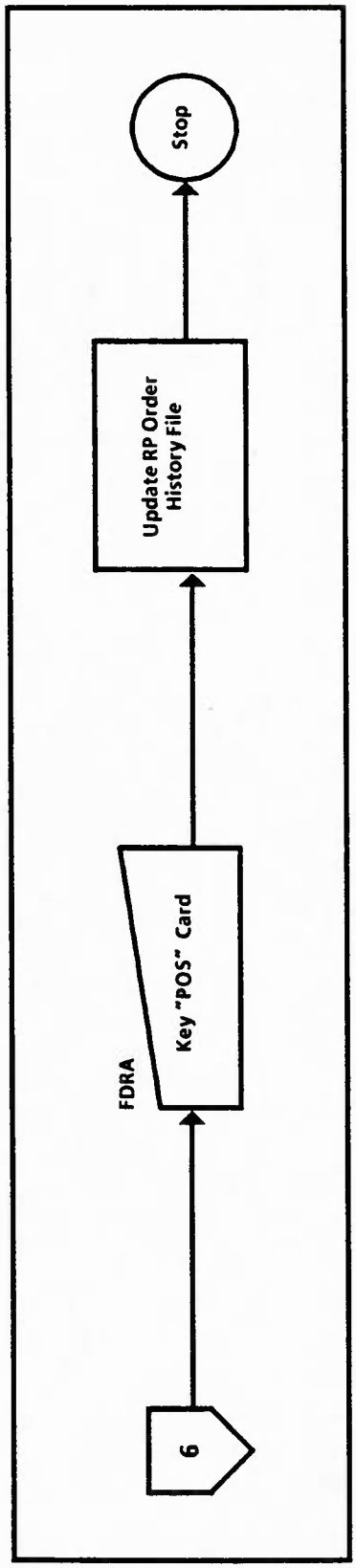


FIGURE C-5. DELIVER DEMAND ORDERS FLOWCHART (Continued)

FIGURE C-6. RELEASE LIMITED DOCUMENTS FLOWCHART

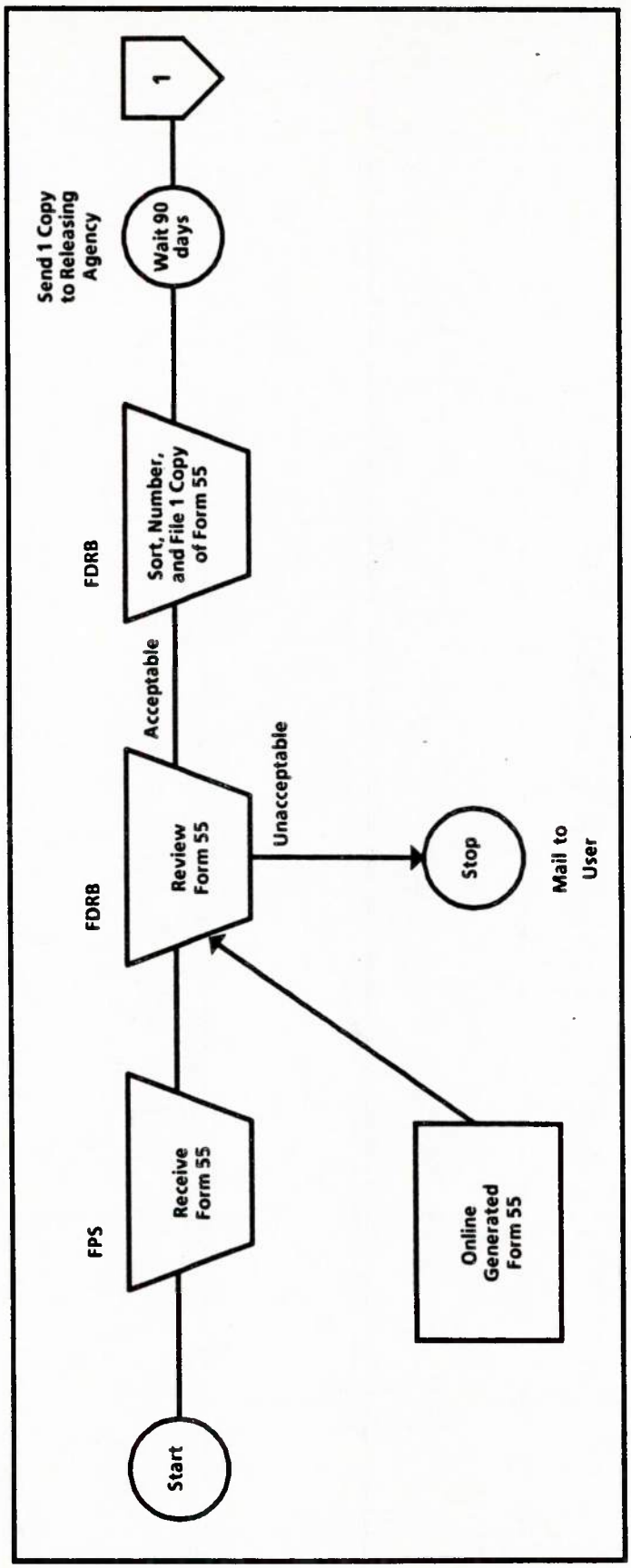


FIGURE C-6. RELEASE LIMITED DOCUMENTS FLOWCHART (Continued)

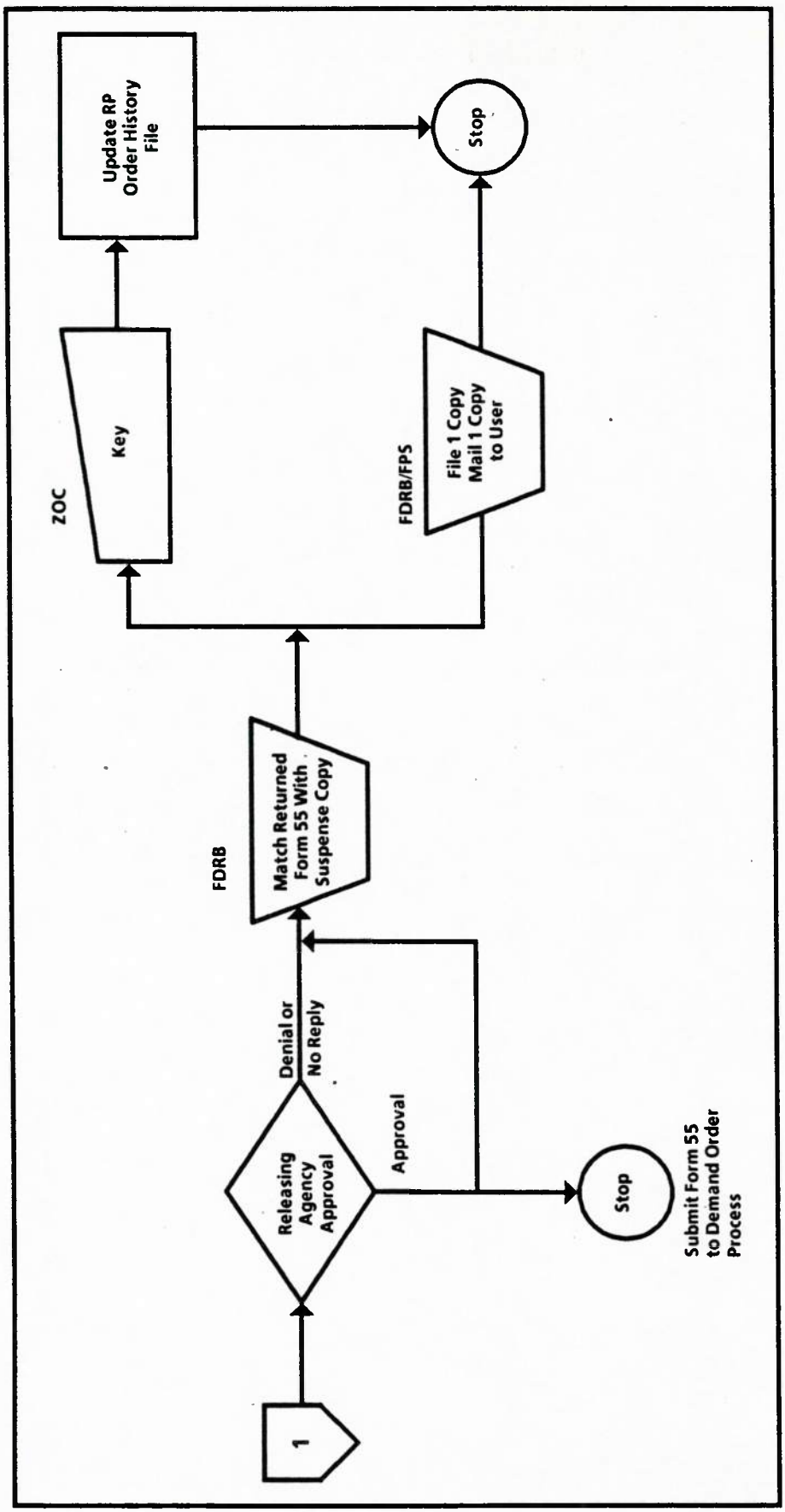


FIGURE C-7. DELIVER DEMAND MANAGEMENT DATABASE REPORTS FLOWCHART

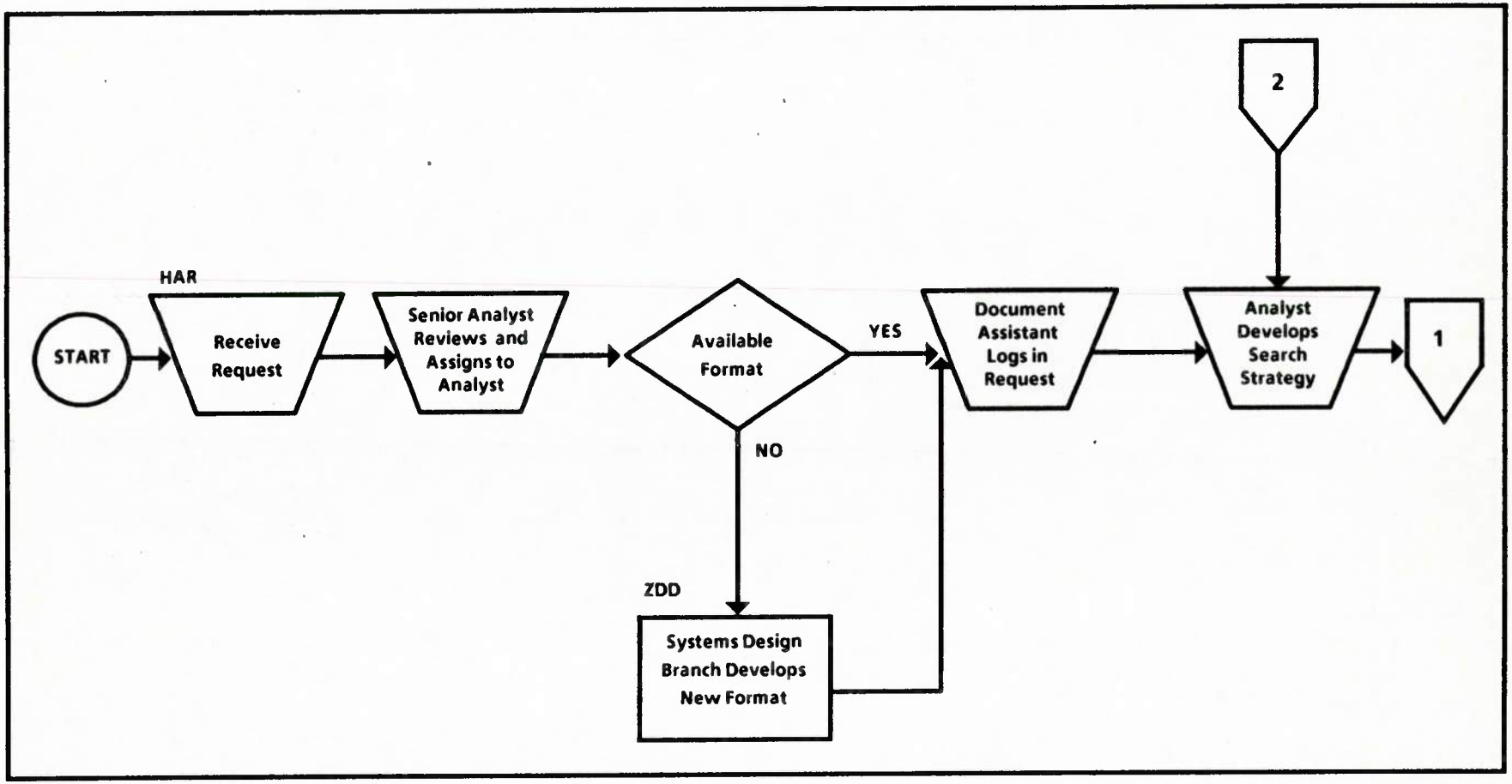
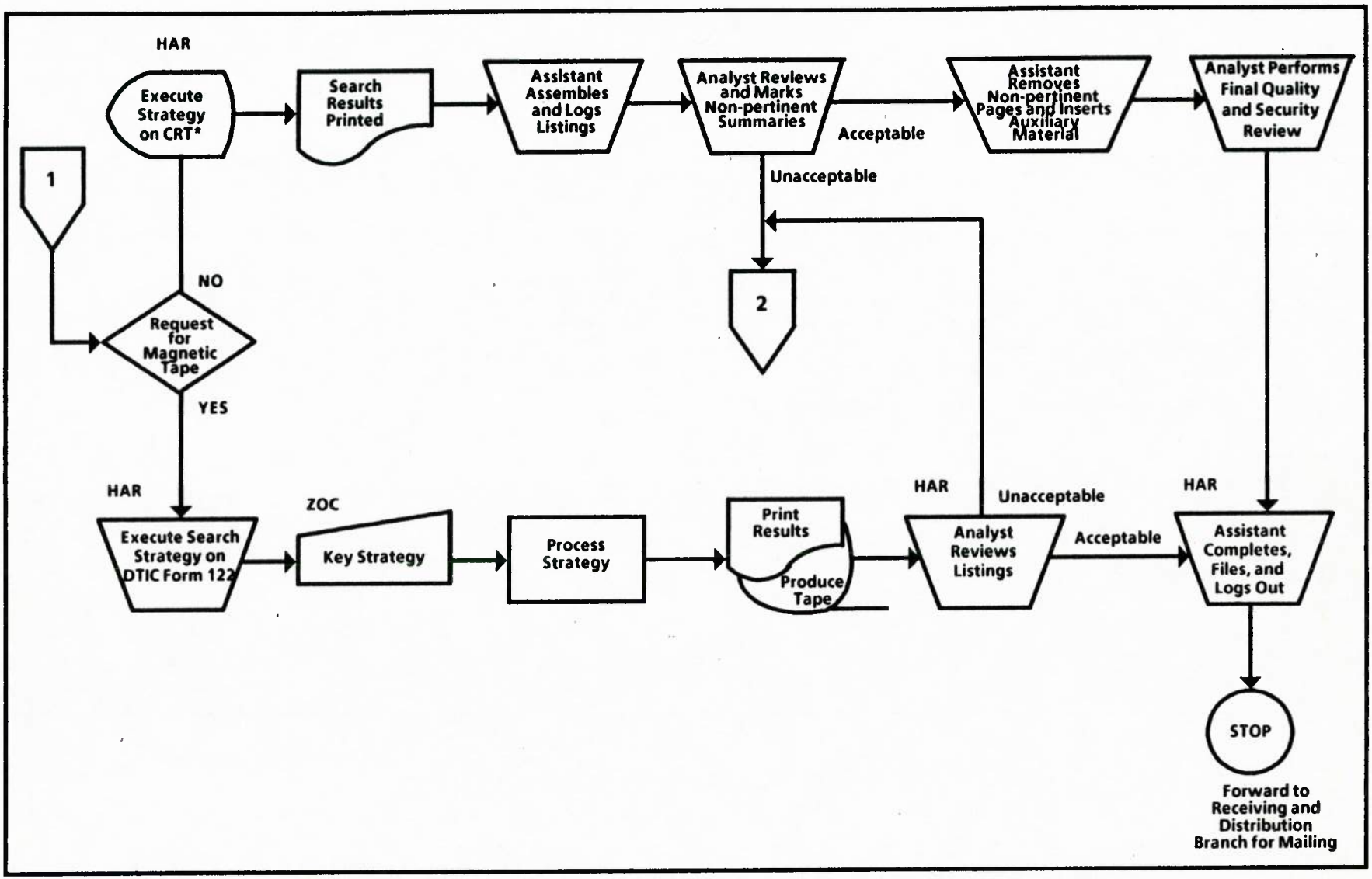


FIGURE C-7. DELIVER DEMAND MANAGEMENT DATABASE REPORTS FLOWCHART (Continued)



*Search may also be produced by completing a Form 122, and generating it in batch mode as for tape requests.

FIGURE C-8: DELIVER DEMAND BIBLIOGRAPHIES FLOWCHART

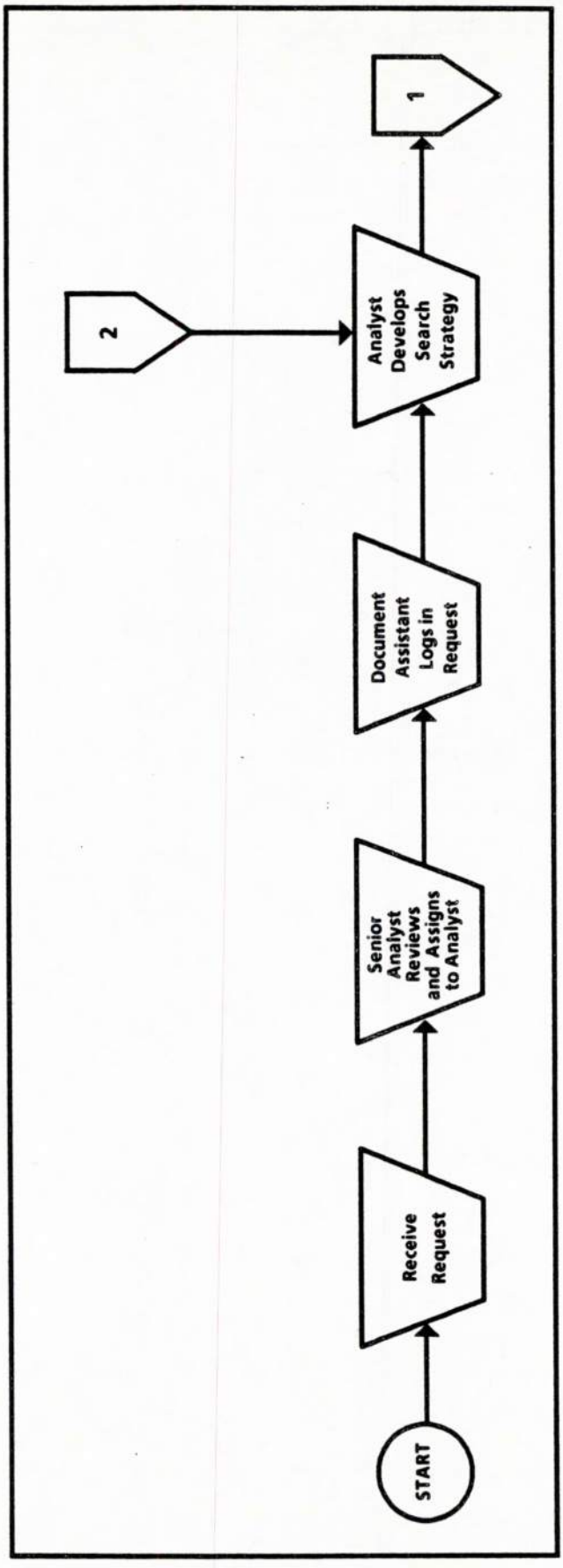
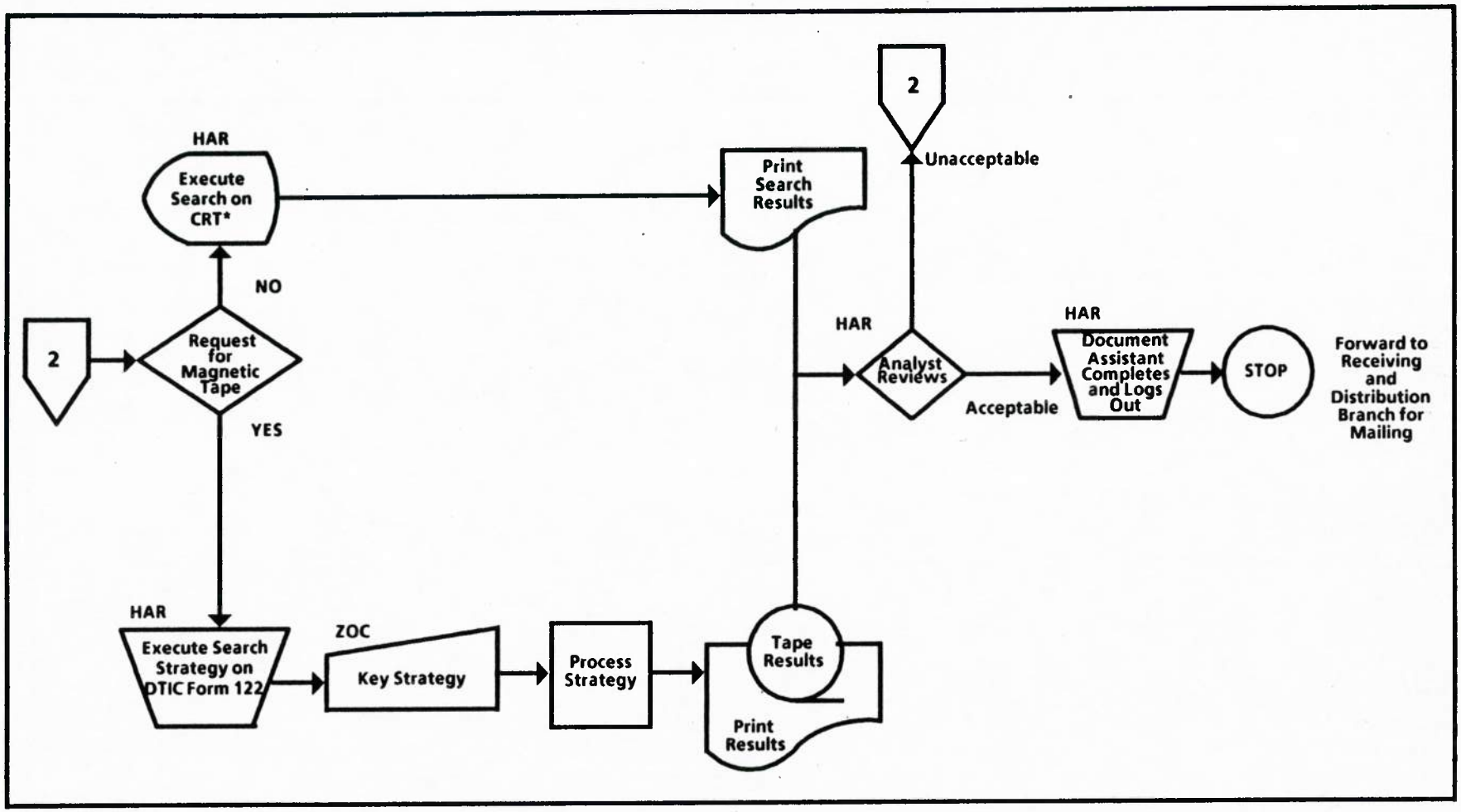


FIGURE C-8. DELIVER DEMAND BIBLIOGRAPHIES FLOWCHART (Continued)



*Search may also be produced by completing Form 122, and generating it in batch mode as for tape request. Analyst may also flag whether or not the search results should be sent directly from Production Control, or as is generally the case, returned to Retrieval Analysis for review.

FIGURE C-9. REGISTER USER PROCESS FLOWCHART

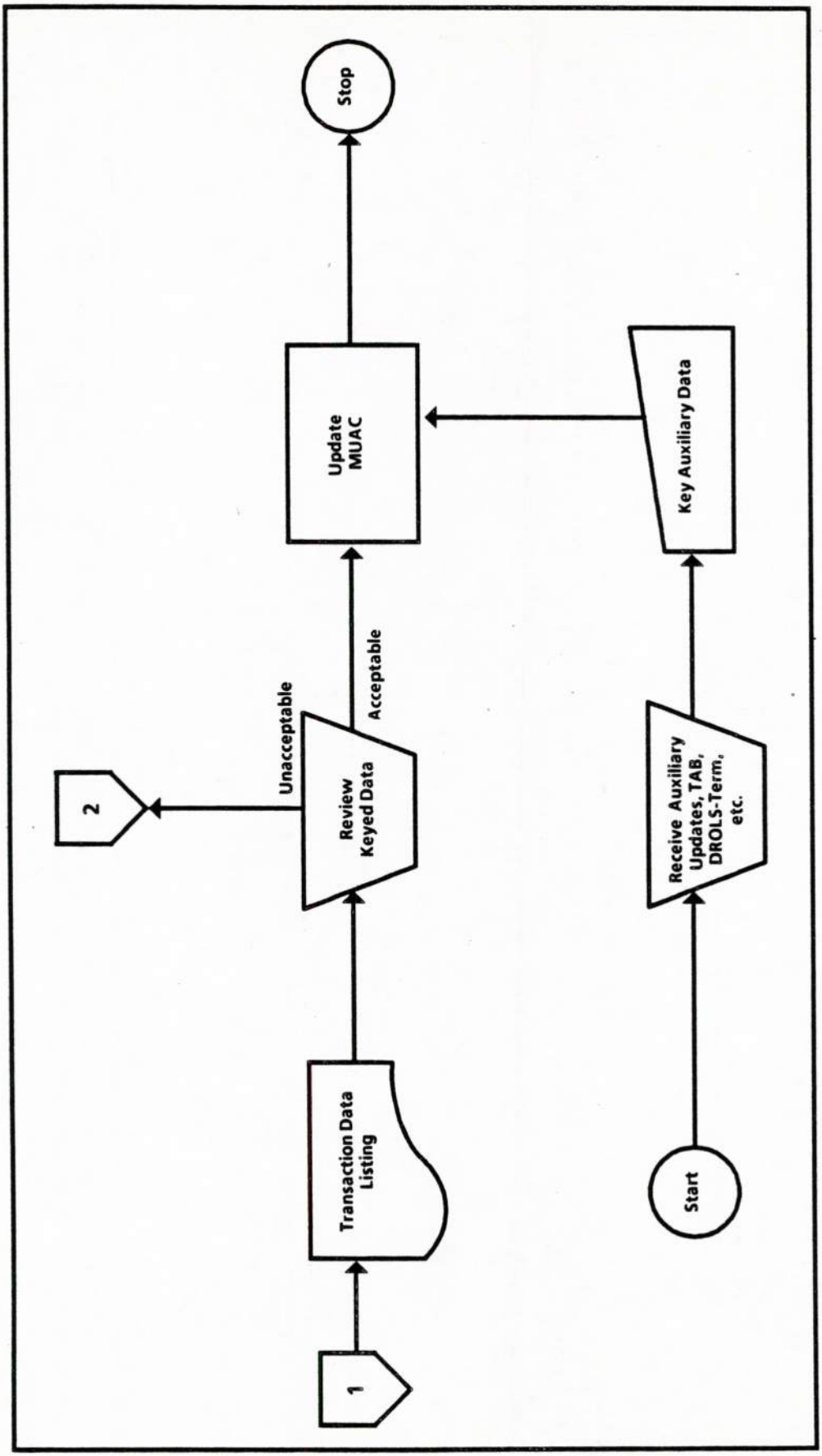
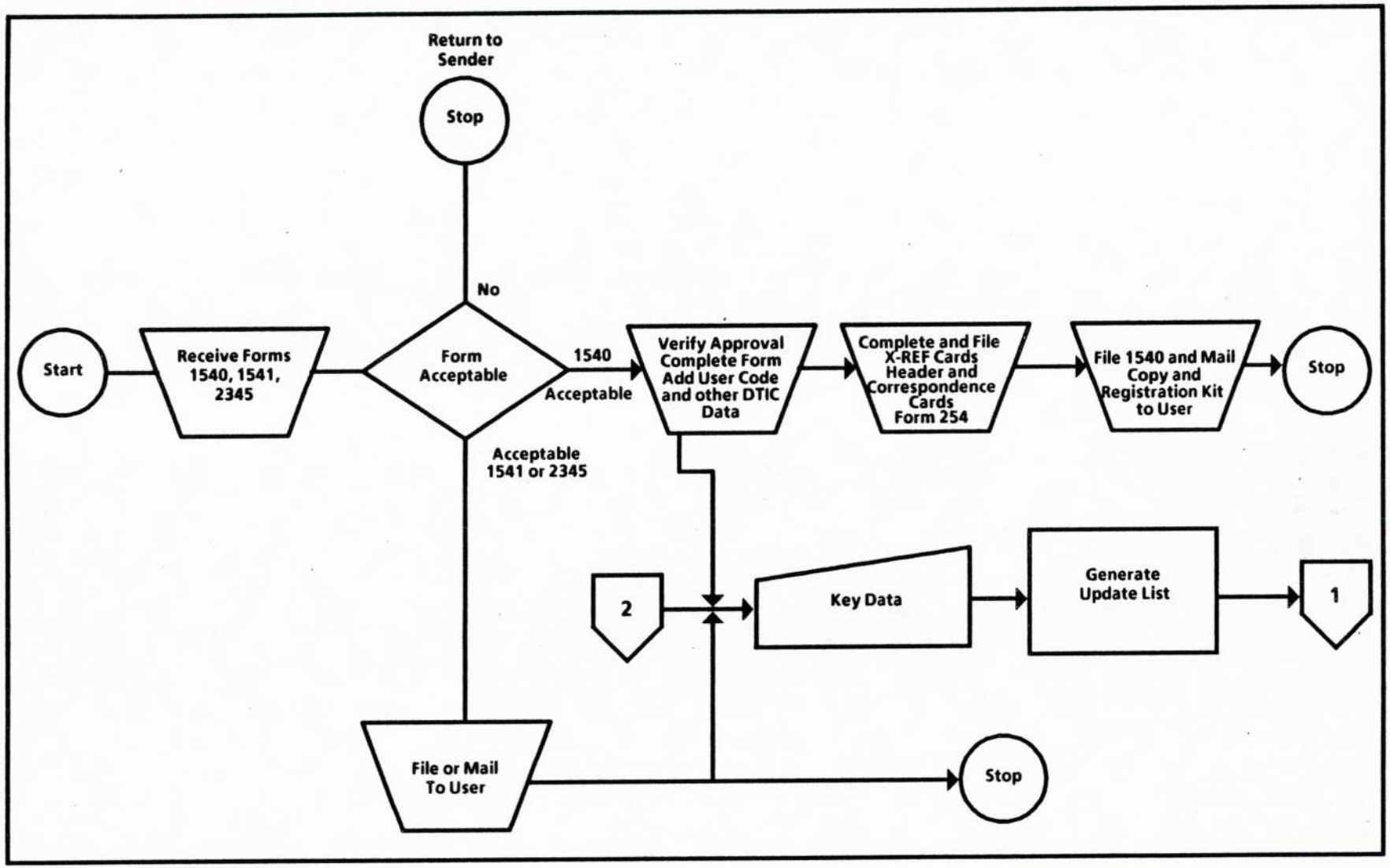


FIGURE C-9. REGISTER USER PROCESS FLOWCHART (Continued)



APPENDIX D

PROCESS AUTOMATION STATUS

This appendix presents two tables which associate the processes to the automated systems. Table D-1 classifies each process as either mechanized, manual, or automated. Mechanized processes are defined as depending on a mechanical device not commonly found in an office environment. These processes are primarily those associated with microfiche handling and printing. Mechanized processes may also be classified as automated. All other processes are classified either as manual or automated, depending on which method predominated in the work. In this case, a combined (mixed) classification was not used as automation in some way effects almost all of the Defense Technical Information Center's (DTIC's) processes.

For those processes classified as automated, the names of systems they make major use of are shown. Table D-2 presents the reverse view. It lists the major DTIC computer systems and then associates the processes that make regular and significant use of them.

The following is a list of abbreviations and acronyms used in this appendix:

ADD – Automatic Document Distribution

ADP – Automatic Data Processing

ADPE – Automatic Data Processing Equipment

AMTD – Automatic Magnetic Tape Distribution

AQ – Acquisition Database

CAB – Current Awareness Bibliography

CAI – computer aided instruction

DAB – Document Abstract Bulletin

DB – database

DRIT	–	DTIC Retrieval Indexing Terminology
DROLS	–	Defense RDT&E On Line System
DTIC	–	Defense Technical Information Center
DTSS	–	DTIC ADPE Time-Sharing Service
IAC	–	Information Analysis Center
IR&D	–	Independent Research and Development
MAI	–	Machine-Aided Indexing
MATRIS	–	Manpower and Training Research Information System
MUAC	–	Master User Access and Contract
NLDB	–	Natural Language Data Base
PC	–	Personal Computer
POM	–	Program Objective Memoranda
REGIS	–	Research and Engineering General Input System
RP	–	Request Processing
RTIS	–	Remote Terminal Input System
SBIN	–	Shared Bibliographic Input Network
SBIR	–	Small Business Innovation Research
STI	–	Scientific and Technical Information
TAB	–	Technical Abstract Bulletin
TR	–	Technical Report
WUIS	–	Work Unit Information System

TABLE D-1. AUTOMATION STATUS BY PROCESSES

PROCESS NAME	AUTOMATION STATUS			APPLICATION USED (for automated processes)	EXCEPTIONS
	Manual	Mechanical	Automated		
1. Acquire TRs			X	AQ, DROLS	
2. Acquire Management Data	X				
3. Receive TRs	X				
4. Select TRs	X				Searches DROLS
5. Catalog TRs			X	RTIS, TR Input, Source Files, AQ	
6. Index TRs			X	RTIS, TR Input, MAI – Lexical Dictionary	
7. Verify TRs			X	RTIS, TR Input	
8. Reproduce TRs		X			
9. Inventory TRs			X	RP Inventory	
10. Receive TR Updates			X	RTIS, TR Input	
11. Store SBIN/TRs			X	RTIS, TR Input	
12. Store WUIS Data			X	RTIS, Management DB Input, Source Files, MAI – Lexical Dictionary	
13. Store IR&D Data			X	RTIS, Management DB Input, Source Files, MAI – Lexical Dictionary	
14. Deliver Demand Document Orders		X	X	RP Document Order, RP Order History, RP Inventory, MUAC, Form 1 Validation	
15. Release Limited Document			X	Form 55, Prevalid, MUAC, RP Order History	Extensive manual procedures employed
16. Deliver Demand Bibliographies and Reports			X	DROLS, TR – Output – Bibliographies, Management – Output, TR – Output – DAB	
17. Maintain DROLS DBs			X	DROLS	
18. Produce ADD		X	X	MUAC,TR – Output – ADD	
19. Publish Recurring Products			X	CAB Profiles, TR – Output – CAB,TR – Output – AMTD, TR – Output – Bibliographies, Management – Output, MUAC	

TABLE D-1. AUTOMATION STATUS BY PROCESSES (Continued)

PROCESS NAME	AUTOMATION STATUS			APPLICATION USED (for automated processes)	EXCEPTIONS
	Manual	Mechanical	Automated		
20. Publish TAB		X	X	MUAC, TR – Output – TAB	
21. Print STI and Other Materials		X			
22. Maintain DRIT			X	NLDB, Lexical Dictionary, Thesaurus	
23. Maintain Fields and Groups	X				
24. Maintain Source Headers and other authority data			X	Source files	
25. Maintain "How to Get It" and Referral Databank			X	RTIS, TR/Input	
26. Operate Field Offices	X			DROLS, RP – Document Order	Searches DROLS, Inputs to RP Document Order
27. Manage IACs	X				
28. Operate MATRIS			X	MATRIS	
29. Operate SBIR	X		X	TR – Output – Bibliographies, RP – Document Order	
30. Develop New STI Technology	X				
31. Monitor STI Productivity	X				
32. Exchange STI Data			X	RP – Document Order	
33. Register Users			X	MUAC	Extensive manual procedures employed
34. Register DROLS Users			X	MUAC	
35. Bill Users			X	RP – Document Order, TR – Output – AMTD, TR – Output – ADD, DROLS	
36. Train Users	X			DROLS	
37. Receive Communications	X				
38. Conduct User Conferences	X				
39. Support User Organizations	X				

TABLE D-1. AUTOMATION STATUS BY PROCESSES (Continued)

PROCESS NAME	AUTOMATION STATUS			APPLICATION USED (for automated processes)	EXCEPTIONS
	Manual	Mechanical	Automated		
40. Operate ADPE Applications Process Group			X		
41. Develop and Maintain ADPE Applications Process Group	X		X		
42. Manage ADPE Equipment and Resources Process Group	X			ADPE Inventory	
43. Administer Organization's Structure and Policies Process Group	X				
44. Develop/Execute DTIC's Budgets	X				Uses PC to compute figures
45. Prepare POM	X				Uses PC to compute figures
46. Develop Congressional Fact Books	X				
47. Process Commitment, Obligation, and Reimbursement Documents	X				
48. Administer Organization's Human Resources Process Group	X		X		
49. Perform Public Relations and Marketing Process Group	X				
50. Coordinate Office Automation Efforts	X				
51. Process Procurement Actions for Supplies	X				
52. Process Building Service Requests	X				
53. Process Mishap Reports	X				
54. Process Equipment Requests	X				
55. Manage DTIC Library	X				Uses PC for remote DB accesses

TABLE D-1. AUTOMATION STATUS BY PROCESSES (Continued)

PROCESS NAME	AUTOMATION STATUS			APPLICATION USED (for automated processes)	EXCEPTIONS
	Manual	Mechanical	Automated		
56. Administer Training Programs	X				Uses DTSS for CAI
57. Monitor Employee Suggestions	X				
58. Administer Publication Management Program	X				

TABLE D-2. ADP SYSTEMS PROCESSES USED IN

ADP APPLICATION SYSTEM NAME	PROCESSES USED IN
AQ	Acquire TRs, Catalog TRs
RTIS	Catalog, index, verify, receive updates, and store SBIR/TRs; store WUIS and IR&D data
TR – Input	Catalog, index, verify, receive updates, and store SBIN TRs; reproduce TRs
Management Input (REGIS)	Store WUIS data, store IR&D data
Management Output	Deliver demand bibliographies and reports, publish recurring products
TR – Output	Publish TAB
– TAB	
– ADD	Produce ADD, bill users
– Bibliographies	Deliver demand bibliographies and reports, operate SBIR
– CAB	Publish recurring products
– AMTD	Publish recurring products, bill users
– DAB	Deliver demand bibliographies and reports
CAB Profiles	Publish recurring products
DROLS Updates	Maintain databases, verify TRs, store WUIS data, store IR&D data
DROLS Retrieval	Acquire TRs, catalog TRs, deliver document orders, deliver demand bibliographies and reports, operate field offices, maintain databases, bill users, train users
MAI – NLDB	Maintain DRIT
– Lexical Dictionary	Maintain DRIT, index TRs, store WUIS data, store IR&D data
DRIT Thesaurus	Maintain DRIT
Fields and Groups	Maintain Field and Groups
Source Files	Maintain source headers and other authority data, catalog TR, store WUIS data, store IR&D data

NOTE: This table lists the primary ADP application systems (maintained on the Sperry 1100/82 and 61 computers) and the processes they are used in. It lists only those processes making extensive regular use of the system.

TABLE D-2. ADP SYSTEMS PROCESSES USED IN (Continued)

ADP APPLICATION SYSTEM NAME	PROCESSES USED IN
RP – Document Orders	Deliver document orders, release limited documents, operate field offices, operate SBIR, bill users
– Inventory	Inventory TRs, deliver document orders, release limited documents, operate field offices, bill users
– Order History	Deliver document orders, release limited documents
– Form 1 Validation	Deliver document orders
Form 55 Prevalidation	Release limited documents
MUAC	Register users, register DROLS users, deliver document orders, release limited documents, produce ADD, publish recurring products, publish TAB
DROLS Registration	Register DROLS users
MATRIS	Operate MATRIS
DLA – TO Security	(See Command Security Officer in Chapter 2)
ADP Inventory	Manage ADP equipment and resources
Program Inventory	Operate ADP applications, develop and maintain ADP applications
Tape Management System	Operate ADP applications
Workloads (ADP)	Operate ADP application, develop and maintain ADP applications

NOTE: This table lists the primary ADP application systems (maintained on the Sperry 1100/82 and 61 computers) and the processes they are used in. It lists only those processes making extensive regular use of the system.

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9. ABSTRACT *(Continue on reverse if necessary and identify by block number)*

The Defense Technical Information Center's (DTIC's) operations are supported by automated and mechanical tools in many areas. The automated portions are extensive, but are generally 10 to 25 years old. Most of the computer systems are batch-process oriented. The mechanized portions include specialized equipment for microfiche processing, printing, and binding. With few exceptions, that equipment is reliable and effectively utilized. Still many of DTIC's operations, especially in the administrative area, are largely manual.

Our recommendations for modernization include:

- DTIC should utilize an automated project management system to develop and control its System Modernization Plan. Such a system will help DTIC focus its limited resources on high-priority projects. It will also eliminate many manual reporting systems and be useful in the management of other project oriented work, particularly in the Directorate of Telecommunications and Automated Data Processing (ADP) Systems.
- Two major areas of DTIC operations require further analysis before detailed recommendations for modernization can be made. These are the processes of delivering copies of technical reports (TRs) to users and the automated systems themselves. While a specific action plan for these areas is not feasible at this time, Chapter 4 suggests some areas for consideration.

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- DTIC should support the variety of personal computer (PC) and Distributed Minicomputer for Management Information System (DMINS) terminals being installed. There is currently little control over the use of these systems and applications development for them is being left to the Division or Branch which obtained the system. PC application projects should be considered a part of the overall modernization plan. Those projects which are approved should be given appropriate programming support.
- Under the direction of the overall modernization project, DTIC should evaluate implementation of numerous applications on PCs. Specific ones we would include are the tracking of classified mail receipts and several work tracking systems, including in the Retrieval Analysis and Printing Branch. Additionally, providing the daily pipeline reports should be automated on a PC with a spreadsheet/database program – a mechanism for gathering the daily productivity data is already in place and works.
- Other recommendations include extending the capabilities of the Acquisition system and modifying the processes for utilizing the Machine-Aided Indexing (MAI) programs.